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A FLORA

OF

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A
FLORA OF NORTH AMERICA:

CONTAINING

ABRIDGED DESCRIPTIONS OF ALL THE KNOWN INDIGENOUS AND
NATURALIZED PLANTS GROWING NORTH OF MEXICO;

ARRANGED ACCORDING TO

THE NATURAL SYSTEM.

BY

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VOL. I.

*COMPRISING THE POLYPETALOUS DIVISION OF THE
DICOTYLEDONOUS OR EXOGENOUS PLANTS.*

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TO

SIR WILLIAM JACKSON HOOKER, K. H., LL. D.,

REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW, ETC., ETC.,

WHOSE NAME IS IDENTIFIED WITH

NORTH AMERICAN BOTANY,

THIS WORK,

WHICH IS GREATLY INDEBTED TO HIS GENEROUS ENCOURAGEMENT,

IS MOST RESPECTFULLY DEDICATED

BY HIS OBLIGED FRIENDS,

THE AUTHORS.

☞ The first part of this Volume (to page 184) was published in July, 1838: the second (to page 360) in October, 1838: the remainder in June, 1840.

PREFACE.

The first volume of this work having been at length completed, the authors have to perform the pleasing duty of offering their acknowledgments to their numerous friends and correspondents who have rendered important assistance to their arduous undertaking.

To Sir **William Hooker**, than whom perhaps no person has done more for the advancement of North American Botany, we are largely indebted, not only for the opportunity of consulting his rich herbarium and excellent library under the most favorable circumstances, on two different occasions, but for the generous communication of a great number of authentic specimens of the plants described in the *Flora Boreali-Americana*, the *Botany of Capt. Beechey's Voyage*, and other works, selected from the collections made in the Northern land expeditions of Capt. Sir John Franklin, those of the Arctic voyages of discovery, and especially from those made in Oregon, the Rocky Mountains, &c. by the late Mr. Drummond, the late indefatigable Douglas, Mr. Tolmie, and others. To Dr. **Richardson** we are directly indebted for many plants collected by himself in Capt. Franklin's first expedition to the shores of the Arctic Sea; and to Dr. now Professor **Scouler**, for a collection of Oregonplants.

To Mr. **Brown** our acknowledgments are due for the unrestrained opportunity of consulting the Banksian herbarium, as well as the herbaria of Clayton, Catesby, Plukenet, and the other collections in his charge at the British Museum; and to Mr. **Bennett**, the Assistant Curator, and Secretary of the Linnæan

Society, who by his kind attention greatly facilitated our labor.

We are under deep obligations to Mr. Bentham, for much important information, for the privilege of consulting his rich herbarium, for many rare American plants, and especially for a very full set of the plants collected by the late Mr. Douglas in Oregon and California, which were confided to him, as Secretary of the London Horticultural Society, for distribution.

To Dr. Lindley we are indebted for the opportunity of consulting his very large herbarium, for many authentic specimens, and for valuable suggestions.

To Dr. Arnott our thanks are due for much very important information, many valuable contributions to our herbaria, and for the privilege of consulting his own excellent herbarium.

To Prof. Don, for very obliging assistance in the examination of the Linnæan herbarium.

To Mr. Lambert, for the facilities afforded us in examining the plants of Pursh, Bradbury, Mr. Nuttall, &c. which form a part of his very large collection.

To Dr. Boott, for kind assistance in the determination of the species of several difficult genera.

To Mr. Fraser, for the privilege of examining the herbarium of Walter in his possession.

To Prof. Adrien de Jussieu, for the opportunity of consulting his own herbarium, and that of his distinguished father, which is authentic for many species of Lamarck, Poiret, &c.: to his kind offices also, as well as to Mr. Decaisne, Assistant Botanist in the Museum of the Jardin des Plantes, we are indebted for many facilities in consulting the vast collections of that establishment, comprising the herbarium of Michaux, and many others of much interest to the North American Botanist.

To Baron Benjamin Delessert, for access to his immense herbarium and very complete botanical library.

To Mr. P. Barker-Webb, for obliging assistance in the examination of the North American plants of the herbarium of Desfontaines, and the other collections which are incorporated in his vast herbarium. Also to Mr. Spach, of the Jardine des Plantes, for specimens of many North American plants cultivated in that establishment.

To Prof. De Candolle of Geneva, for the important privilege of freely consulting his large herbarium through all the families which are now published in his Prodromus, and for duplicates of many interesting plants of the Order Compositæ.

To Dr. Endlicher, Curator, and Dr. Fenzl, Assistant Curator of the Imperial herbarium at Vienna, for assistance in consulting that rich collection.

To Dr. Von Martius of Munich, and to Prof. Zuccarini, for access to the Royal Collections and Garden under their charge.

To Prof. Schlechtendal of Halle, for the privilege of consulting his own herbarium, as well as that of Schkuhr, of which he has charge, and for the communication of an interesting set of Mexican plants.

To Dr. Klotszch, the Curator of the Royal herbarium at Berlin, for the greatest attention in facilitating the examination of the herbarium of Willdenow and the other rich collections of that establishment; and for his aid in procuring for us specimens of American plants from the Botanic Garden.

To Prof. Kunth of Berlin, for the opportunity of consulting his herbarium, with the view of comparing several North American plants with species from Mexico and New Spain collected by Baron Humboldt.

To Dr. Trinius and M. Bongard, of the Imperial Academy of Sciences of St. Petersburg, for the communication of many plants from Russian North America and the adjacent Islands.

To Prof. Lehmann of Hamburgh, for the privilege of examining the genera Potentilla, Œnothera, &c. in his herbarium, and for many very interesting specimens in these and other genera: also for a small collection of Greenland plants, made for the most part by the younger Vahl.

To Mr. Nuttall we are indebted for a nearly complete suite of the plants collected during his recent journey across the Rocky Mountains to Oregon and California, accompanied with manuscript descriptions of the new genera and species: also for a portion of the plants collected during his travels in Arkansas in the year 1819.

Our acknowledgments are also due to the Botanical Committee of the Academy of Natural Sciences, Philadelphia, who have obligingly afforded us every facility in consulting the large herbarium of that Society, which includes that of the late Mr. Von Schweinitz, and the chief collections of Mr. Nuttall. To the urbanity of Mr. VAUGHAN, the Librarian of the American Philosophical Society, we are indebted for the opportunity of examining the botanical collections in the custody of that Society, comprising the herbarium of Muhlenberg, and that of the late Professor Benjamin Smith Barton, which appears to have been formed by Pursh, and contains many of his plants.

To the daughter of the lamented ELLIOTT, we desire to express our thanks for kindly entrusting to our charge a portion of her late father's herbarium; and also to Prof. BACHMAN and Prof. GIBBES of Charleston, South Carolina, who kindly selected and transmitted to us the specimens which we desired.

To Mr. B. D. GREENE of Boston, for the loan of a very complete set of the plants collected by the late Mr. Drummond in Texas.

To our numerous correspondents in different parts of the country, who have from time to time furnished us with valuable collections and observations, our limits will only allow us to offer our acknowledgments in general terms. Their names frequently occur throughout the pages of this work, where we have endeavored faithfully to indicate the sources from which our specimens have been derived, as fully as the plan of the work would permit. But whenever a species has been received from several correspondents, and from different sections of the country, we are obliged, in most cases, to omit the citation of particular localities, and to give as nearly as possible its geographical range. Additional specimens of many rare plants described in this volume have also been received since the Orders to which they belong were printed; and we have only space to notice the more important of these accessions in the Supplement, this volume having already extended much beyond its intended limits. We would therefore, at present, briefly state, that we are indebted to the following persons, to many of them very largely, for the plants of particular districts, accompanied in many instances by valuable notes and observations, viz:

To Prof. Bigelow, Mr. B. D. Greene, and Mr. Edward Tuckerman, Jr. of Boston, Mr. Oakes of Ipswich, Dr. Jacob Porter of Plainfield, and Mr. T. A. Green of New-Bedford, Massachusetts, Prof. Hitchcock of Amherst College, as well as to Prof. Emmons, late of Williams College, and Prof. Dewey, late of Pittsfield, Massachusetts, for plants from various portions of that state as well as of Maine and New-Hampshire.

To Dr. Barratt of Middletown, Connecticut, for the plants of that neighborhood, and also from the White Mountains of New Hampshire, &c.: also to Prof. Tully, of Yale College, for some interesting plants.

For plants of the State of New York, to Dr. Stevenson of Cambridge, Washington County, Dr. Bradley of Monroe County, Dr. H. P. Sartwell of Penn Yan, Yates County, Mr. David Thomas of Cayuga County, Dr. Crawe of Jefferson County, Dr. Aikin formerly of Troy, Prof. Lewis C. Beck formerly of Albany, Mr. A. J. Downing of Newburgh, Prof. Bailey of West Point Military Academy, and to Mr. Wm. Cooper, Mr. Abraham Halsey, Prof. Eaton, Mr. R. J. Brownne, and Mr. John Carey, of New York; many of whom have also furnished us with plants from different portions of the United States.

For those of Pennsylvania and New Jersey, &c. our chief contributors are Dr. Pickering and Mr. Durand of Philadelphia, and Dr. Darlington of West Chester, Pennsylvania. From Virginia, a small collection has been received from the Rev. Prof. Ruffner.

For plants from North Carolina we are chiefly indebted to the Rev. Mr. M. O. Curtis, to the late Mr. Von Schweinitz, from whom we also received many plants from other parts of the United States, and to the late Mr. Croom, who also made very interesting collections in Florida.

From South Carolina and Georgia we have received interesting contributions from the late Mr. Elliott, Major Le Conte, the late Mr. Lewis Le Conte, Professor Gibbes of Charleston, Dr. Boykin, now of Columbia, Georgia, the late Dr. H. Loomis of Macon, and Dr. Bacon of St. Mary's, Georgia.

From Middle Florida, Dr. A. W. Chapman of Mariana has very fully supplied us with the plants of that region, and many have also been communicated by Dr. Alexander; while from Southern and Eastern Florida we have received interesting collections from Dr. Leavenworth, Dr. Burrows, Dr. Hulse, and Lieut. Alden of the United States Army; and Dr. John F. Baltzell has sent many specimens from Apalachicola. A portion of the plants collected by the late Dr. Baldwin were communicated to us through the late Mr. Schweinitz; but his original herbarium is incorporated in that of the Academy of Natural Sciences, Philadelphia. The Rev. Mr. Bennett of Geneseo, New York, presented us with many plants collected by himself during a residence at Key West, and we have received a nearly complete and excellent set of the plants of that island from Mr. J. L. Blodgett, which however reached us at too late a period to receive notice in this volume.

From Alabama we have a large number of plants collected by Dr. Gates; and others have been received through the kindness of Dr. Fletcher and Dr. Jewett of Mobile.

From Louisiana the chief contributions have been received from Dr. Ingalls of New Orleans, Dr. Riddell of New Orleans (from whom we have also received many plants of Ohio), Dr. Hale of Alexandria, and Prof. Carpenter of Jackson. From this State, and also from Arkansas and the borders of Texas, we have received interesting collections from Dr. Leavenworth; and Dr. Pitcher of Detroit, formerly of the United States Army, furnished us with a very important suite of Arkansas plants.

From Tennessee, Dr. Currey has sent us interesting plants: from Kentucky we have received excellent and extensive collections from Prof. Short, Dr. Peter, and from the late Mr. H. H. Eaton: from this State also, and from other districts, we have received many specimens from Mr. Rafinesque.

From Illinois, Mr. Buckley has sent us large collections; and to him we are also indebted for many plants from the mountains of Virginia, and from Alabama.

From Indiana, Dr. Clapp of New Albany has supplied us with many interesting plants.

From Ohio, Mr. T. G. Lea, Mr. Wm. S. Sullivant, Mr. John Samples, and Dr. Paddock, are the chief contributors.

From Michigan, Dr. Houghton and Dr. Wright have furnished us with numerous plants: to the former we are under additional obligations for a parcel of plants collected towards the sources of the Mississippi. From the same region we have an interesting collection made by Major D. B. Douglass during the Expedition of Gov. Cass.

To Dr. Pitcher we are also indebted for many plants collected in the northern part of Michigan, the shores of Lake Superior, &c. From Milwaukie, Wisconsin Territory, we have received a collection of plants from Dr. Lapham. To Dr. Holmes of Montreal, Mrs. Percival, Mr. and Mrs. Sheppard, and Mr. McCrae, we are indebted for numerous plants from Canada.

The collection made by Dr. Edwin James in Major Long's Expedition to the Rocky Mountains, of which an account has been given in the Annals of the Lyceum of Natural History, has been very useful to us.

The authors venture to hope that their obliging correspondents will still continue to render their assistance in the farther prosecution of this work, by sending the rarer plants of their respective districts, with such notes and observations as they may deem important.

Since the publication of the earlier portions of this volume, our opportunities for examining the herbaria of original authors have been very much extended; and the necessary corrections and changes we have been obliged to make on this account, together with some additions from works recently published and from materials since received, are given in the appended Supplement. We trust these investigations will give this work an important value in respect to the authenticity of the specific names, and that future changes of the kind will not be to any considerable extent necessary.

A complete index of the genera and species, and an enumeration of all the works which relate to North American Botany, or are cited in this work, will be given with the concluding volume, and likewise, if space permit, some general observations respecting the geographical distribution of North American plants. A connected notice of those plants which are important on account of their active or medicinal properties or economical uses, will also be added.

New York, June 1st, 1840.

⁂ The exclamation point is used after the manner in which it is employed by De Candolle and other modern botanists, to indicate that we have seen an authentic specimen of the author, or from the locality cited. When the dash is omitted after the character of a species, the description is derived from the author whose name immediately follows: when the dash is inserted, we are alone responsible for the description. The abbreviations of the names and works of authors are mostly those in common use, and will be generally understood: they will, however, be fully explained at the close of the work.

ERRATA.

Page 9, line 28, for ‘*parviflora*,’ read *pauciflora*.
“ 17, “ 11 from bottom, for ‘*Pallassii*’ read *Pallasii*.
“ 27, “ 6, add *t*. 17.
“ 33, lines 22 & 34, *for* ‘petals,’ *read* sepals.
“ 41, line 1, *for* 20, *read* 21.
“ 54, “ 11, *for* ‘Ovary,’ *read* Stigma.
“ 62, “ 9, *for* 1677, *read* 1948.
“ 76, “ 15, *dele* ‘the leaves.’
“ 80, “ 8, after ‘stem erect,’ *add* ‘leaves.’
“ 101, “ 18, *dele* the exclamation point after ‘*Drummond*.’
“ “ “ 21, *for* ‘stipulate’ *read* stipitate.
“ 116, “ 5 from bottom, *for* ‘Forula,’ *read* Florula.
“ 135, “ 11, *dele* ‘more.’
“ 141, “ 20, *for* 9, *read* 79.
“ 156, “ 7, for 55, *read* 555.
“ 157, “ 20, *for* ‘the preceding species,’ *read* Crux-Andreæ.
“ 194, “ 16, *for* ‘Cuphæa,’ *read* Cuphea.
“ 223, “ 11 from bottom, for ‘*Schweintz*,’ read *Schweinitz*.
“ 257, “ 17, for ‘*Willd.*’ read *Linn.*
“ 263, “ 31, *for* ‘coll. 2.’ *read* coll. 3.
“ “ “ 40, *for* ‘E. Michauxii,’ *read* S. Michauxii.
“ 265, “ 18 from bottom, } *for* ‘peper,’ *read* pepper.
“ 268, “ 8 from top, }
“ 289, “ 6, *for* 9, *read* 10.
“ “ “ 27, *for* 11, *read* 14. The succeeding genera are incorrectly numbered.
“ 309, “ 19, *for* ‘leaves’ *read* leaflets.
“ 320, “ 2 from bottom, add ‘*Nutt.*’
“ 327, “ 17 from bottom, for ‘L. sericeus,’ *read* H. Purshiana.
“ 328, “ 8, *for* ‘monadelphous,’ *read* diadelphous.
“ 329, “ 11, for ‘*pauciflora*’ read *pauciflorus*.
“ “ “ 35, *for* 739, *read* 474.
“ 331, “ 30, *for* 451, *read* 150.
“ 360, “ 17 from bottom, *for* ‘glabrous’ *read* scabrous.
“ 388, “ 4 from bottom, *for* ‘emargniate’ *read* emarginate.
“ 411, “ 4 from bottom, for ‘*ilicifolius*’ read *ilicifolia*.
“ 507, “ 25, *for* ‘acaulis’ *read* subacaulis.

FLORA

OF

NORTH AMERICA.

I. CORMOPHYTA. Endlicher.

Dicotyledones, Monocotyledones, and Acotyledones in part, *Juss.*

Plants consisting of a *root* and *stem* growing in opposite directions, composed of regular cellular tissue traversed (except in the very lowest forms) by woody fibre and vessels. Stem increasing in size either at the apex and circumference simultaneously, or at the apex solely, producing *buds*, and (with few exceptions) distinct *leaves* at definite points and in regular order: the cuticle usually furnished with *stomata*. Propagation effected by means of *flowers* and *seeds* in the higher forms, and of *spores* in the lower.

Class I. EXOGENOUS OR DICOTYLEDONOUS PLANTS.

Flowering plants.—Stem with a distinct bark and pith, separated from each other by an interposed zone consisting of woody fibre, ducts, and spiral vessels: increase in diameter effected by the successive deposition, between the old wood and the bark, of new woody and cortical matter, which in perennial trunks is usually arranged in concentric zones, and traversed by medullary rays. Leaves furnished with stomata, commonly articulated with the stem, their veins branching and reticulated. Floral enve-

LOPES commonly arranged in a quinary (sometimes binary or quaternary, but very rarely in a ternary) manner, sometimes incomplete or wanting. OVULES enclosed in a pericarp, fertilized by the action of pollen through the medium of a stigma, and finally becoming seeds. EMBRYO with 2 (rarely more) opposite cotyledons; the radicle in germination elongating directly into a root.

SECTION I. POLYPETALOUS EXOGENOUS PLANTS.

Thalamifloræ and Calycifloræ, *DC.*

Floral envelopes consisting of both calyx and corolla; the latter composed of distinct petals.[*]

Artificial Analysis of the Polypetalous Exogenous orders, which are represented in the Flora of North America.

I. OVARIES SUPERIOR, OR PARTLY SO.

§ 1. ***Ovaries more than one, distinct (when in several whorls sometimes aggregated or coalescent into a mass, but not syncarpous.)***

Leaves (emersed ones) centrally peltate. Water-plants.	
Torus turbinate, enclosing the ovaries in separate hollows.	9. NELUMBIACEÆ.
Torus inconspicuous. Stamens 6–36.	7. CABOMBACEÆ.
Leaves not centrally peltate.	
Stamens numerous.	
Ovaries (achenia) enclosed in the subglobose calyx-tube, numerous.	
Leaves opposite, not stipulate.	50. CALYCANTHACEÆ.
Leaves alternate, stipulate.	49. § ROSEÆ.
Ovaries not enclosed by the calyx-tube.	
Petals and stamens perigynous.	49. ROSACEÆ.
Petals and stamens hypogynous.	
Æstivation of the calyx valvate.	
Leaves alternate. Stamens monadelphous.	38. MALVACEÆ.
Leaves opposite. Stamens distinct.	
Æstivation of the calyx imbricated.	
Herbs with acrid juice. Flowers perfect.	1. RANUNCULACEÆ.
Climbing shrubs. Flowers small, diœcious.	5. MENISPERMACEÆ.
Trees or shrubs (bitter and aromatic).— Flowers large, perfect. Anthers adnate.	
Anthers (short) extrorse. Sepals persistent. Albumen ruminated.	3. ANONACEÆ.
Anthers (long) introrse. Albumen solid.	2. MAGNOLIACEÆ.

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[*] The student should bear in mind that the division of Exogenous plants into Polypetalæ, Monopetalæ, and Apetalæ, however convenient, is in a considerable degree arbitrary; and that polypetalous orders often contain apetalous genera and species: the petals, moreover, are occasionally more or less combined.

Stamens few (not more than twice the number of the sepals).	
Stamens monadelphous. Monœcious. Leaves simple, dotted.	4. SCHIZANDRACEÆ.
Stamens distinct, submonœcious. Leaves compound, dotted.	33. ZANTHOXYLACEÆ.
Stamens distinct. Leaves not dotted.	
Leaves stipulate. Stamens perigynous.	49. ROSACEÆ.
Leaves not stipulate.	
Carpels 1-seeded utriculi: styles united.	30. LIMNANTHACEÆ.†
Carpels 1-seeded, woody: styles from the base.	64. SURIANACEÆ.
Carpels 1-seeded, drupaceous, incurved.	5. MENISPERMACEÆ.
Carpels follicular.	
Follicles 1-3-seeded. Polygamous.	1. RANUNCULACEÆ.†
Follicles equal in number to the sepals, several-seeded.	65. CRASSULACEÆ.
Follicles 2 (rarely 3); seeds numerous.	66. SAXIFRAGACEÆ.†

§ 2. *Ovary solitary, simple (of one carpel).*

Anthers (except in *Podophyllum*) opening by recurved valves. Stamens opposite the petals.	6. BERBERIDACEÆ.
Anthers not opening by recurved valves.	
Corolla papilionaceous or irregular. Leguminous.	48. LEGUMINOSÆ.
Corolla (when present) regular.	
Æstivation of the sepals and petals valvate.—Fruit a legume.	48. § MIMOSEÆ.
Æstivation of the sepals valvate, of the petals imbricated. Fruit an achenium.	49. § SANGUISORBEÆ.
Æstivation of the sepals (& petals) imbricated.	
Stamens indefinite, perigynous.	
Style terminal.	49. *Subord.* AMYGDALEÆ.
Style lateral.	49. *Subord.* CHRYSOBALANEÆ.
Stamens indefinite, hypogynous.	1. RANUNCULACEÆ.†
Stamens double the number of the sepals.	
Leaves multifid. Aquatic. Petals none.	8. CERATOPHYLLACEÆ.
Leaves compound, dotted. Drupe oily.	35. AMYRIDACEÆ.
Stamens the same number as the sepals.—Drupe dry.*	34. ANACARDIACEÆ.

§ 3. *Ovary compound or syncarpous.*

* Leaves alternate, or all radical.

† *Stamens indefinite, or more than* 12.

Placentæ parietal.	
Sepals 2 (very rarely 3). Juice milky or colored.	12. PAPAVERACEÆ.
Sepals 4. Juice watery.	15. CAPPARIDACEÆ.
Sepals 5 (rarely 3). Petals fugacious.	20. CISTACEÆ.
Sepals 5. Petals marcescent. Stamens all but 5 sterile.	19. *Subord.* PARNASSIEÆ.
Placentæ occupying the whole surface of the dissepiments.	10. NYMPHÆACEÆ.
Placentæ in the axis.	
Stigma peltate, petaloid. Leaves hollow.	11. SARRACENIACEÆ.
Stigmas not petaloid.	
Capsule 1-celled, with a free central placenta.	25. PORTULACACEÆ.
Capsule more than 1-celled.	

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* Ovary apparently simple, but really compound, as is indicated by the triple style.

Leaves compound (1-foliolate), dotted.	36. AURANTIACEÆ.
Leaves simple, not dotted.	
Æstivation of the calyx imbricated.	37. TERNSTRŒMIACEÆ.
Æstivation of the calyx valvate.	
Stamens monadelphous: anthers 1-celled.	38. MALVACEÆ.
Stamens distinct: anthers 2-celled.	39. TILIACEÆ.

† † *Stamens more or less definite (not more than* 12), *but not equal or double the number of the sepals.*

Anthers opening by terminal pores.	
Stamens monadelphous: anthers 1-celled.	17. POLYGALACEÆ.
Stamens distinct: anthers 2-celled.	17. *Subord.* KRAMERIEÆ.
Anthers opening longitudinally.	
Sepals 2. Petals 4, irregular, somewhat united.	13. FUMARIACEÆ.
Sepals 2. Petals 5, regular.	25. PORTULACACEÆ.
Sepals more than 2.	
Placentæ in the axis. Stamens 5.	29. BALSAMINACEÆ.
Placentæ parietal.	
Capsule of 3–6 carpels, opening at the top.	16. RESEDACEÆ.
Capsule 2-valved. Petals and sepals 4.	
Pod (silique) 2-celled. Stamens 6, two of them shortest.	14. CRUCIFERÆ.
Pod 1-celled. Seeds reniform.	15. CAPPARIDACEÆ.

† † † *Stamens as many, or twice as many, as the sepals.*

Petals twice the number of the sepals.	12. PAPAVERACEÆ.†
Petals (when present) as many as sepals, irregular.	
Sepals and petals 4. Capsule 1-celled, 2-valved.	15. CAPPARIDACEÆ.†
Sepals and petals 5. Capsule 1-celled, 3-valved.	18. VIOLACEÆ.
Petals as many as the sepals, regular.	
Seeds few, (1–2 in each cell).	
Ovary half inferior. Stam. opposite the petals.	47. RHAMNACEÆ.
Stam. (partly sterile) twice the number of the petals.	67. HAMAMELACEÆ.
Ovary wholly superior, (rarely covered by a disk.)	
Stamens twice the number of the petals, distinct.	
Æstivation of the calyx imbricated.	45. SAPINDACEÆ.
Æstivation of the calyx valvate. Utriculi distinct.	30. LIMNANTHACEÆ.
Stamens twice the number of the petals, monadelphous.	
Carpels 5, 1-seeded: styles cohering to the elongated axis.	28. GERANIACEÆ.
Capsule woody. Seeds winged.	41. CEDRELACEÆ.
Drupe 5-celled. Seeds wingless.	40. MELIACEÆ.
Stamens as many as, and opposite the petals.—Disk fleshy.	
Calyx minute, hypogynous. Peduncles and tendrils opposite the leaves.	42. VITACEÆ.
Calyx perigynous with a valvate æstivation.	47. RHAMNACEÆ.
Stamens as many as, and alternate with the petals.	
Disk large and flat, perigynous.	46. CELASTRACEÆ.
Disk small and nearly hypogynous, or none.	
Fruit samaroid, 2-celled. Leaves dotted.	33. ZANTHOXYLACEÆ.
Fruit a dry 1-celled drupe. Stigmas 3.	34. ANACARDIACEÆ.
Fruit a 5–10-celled capsule. Stigmas 5.	27. LINACEÆ.
Seeds numerous.	
Placentæ parietal (sometimes inflexed nearly to the axis).	
Vernation circinnate. Hairs glandular.	19. DROSERACEÆ.
Vernation not circinnate.	

Stamens monadelphous. Ovary stipitate. 59. PASSIFLORACEÆ.
Stamens distinct.
Stigmas branching. Seeds arilled. 58. TURNERACEÆ.
Stigmas simple.
Capsule 3-valved, loculicidal. 20. CISTACEÆ.
Capsule of 2 carpels distinct above, or bipartible, septicidal.
Placentæ in the axis. 66. SAXIFRAGACEÆ.
Capsule 2-(rarely 3-) celled, septicidal.
Capsule 1-celled by the obliteration of the dissepiments. Stigma capitate. 53. LYTHRACEÆ.
Capsule 4-5-celled.
Stamens monadelphous below. Leaves 3-foliolate. 31. OXALIDACEÆ.
Stamens distinct. Leaves simple. 65. CRASSULACEÆ.†

** Leaves opposite.

Stamens indefinite or more than 12.
Ovary half inferior.
Petals linear, very numerous. 63. MESEMBRYANTHEMACEÆ.
Petals as many as sepals (4-10), broad. 51. PHILADELPHACEÆ.
Ovary wholly superior (Petals hypogynous).
Petals twice the number of the caducous sepals. 12. PAPAVERACEÆ.†
Petals (contorted in æstivation), as many as the persistent sepals.
Leaves marked with pellucid or black dots. 21. HYPERICACEÆ.
Leaves not dotted. Petals fugacious. 20. CISTACEÆ.
Stamens not more than twice the number of the petals or sepals.
Corolla irregular. Filaments monadelphous. 17. POLYGALACEÆ.
Corolla irregular. Stamens 7-8, distinct. Leaves compound. 44. HIPPOCASTANACEÆ.
Corolla regular.
Anthers opening by terminal pores. Angles of the ovary cohering with the calyx-tube. 52. MELASTOMACEÆ.
Anthers opening longitudinally.
Leaves simple, entire, with pellucid or black dots. 21. HYPERICACEÆ.
Leaves simple, entire, not dotted.
Capsule of 3-5, spuriously 2-celled carpels. 27. LINACEÆ.
Capsule 1-celled, with parietal placentæ.
Sepals distinct. Petals fugacious. 20. CISTACEÆ.
Sepals united. Petals unguiculate. 22. FRANKENIACEÆ.
Capsule 1-celled, or nearly so: placenta in the axis.
Styles nearly distinct or very short: stigmas capitate. 26. ELATINACEÆ.
Styles united into one: stigma capitate. 53. LYTHRACEÆ.
Styles stigmatose along the inside.
Stipules scarious. 23. ILLECEBRACEÆ.
Stipules none.
Sepals 2-3. Petals 5. 25. PORTULACACEÆ.
Sepals and petals (when present) equal in number. 24. CARYOPHYLLACEÆ.
Leaves serrate, lobed, or compound.
Fruit 2 cohering samaras. Trees. 43. ACERACEÆ.
Fruit a 2-beaked, 2-valved, many-seeded capsule. 66. SAXIFRAGACEÆ.†
Fruit not a samara; cells or carpels 1-few-seeded.
Stamens as many as, and opposite the petals. 42. VITACEÆ.
Stamens as many as, and alternate with the petals. 46. CELASTRACEÆ.

- Stamens twice the number of the petals.
  - Fruit capsular. Leaves abruptly pinnate. 32. ZYGOPHYLLACEÆ.
  - Carpels 5; styles cohering around a long axis. 28. GERANIACEÆ.

II. OVARY INFERIOR, OR COHERENT WITH THE CALYX-TUBE.

* *Stamens indefinite.*

- Fruit a pome; carpels cartilaginous or bony, 1–3-seeded. 49. *Subord.* POMEÆ.
- Fruit capsular or succulent, many-seeded.
  - Capsule 4–5-celled, partly superior. Leaves opposite. 51. PHILADELPHACEÆ.
  - Capsule (or berry) 1-celled, with parietal placentæ.
    - Sepals and petals numerous, confounded. 62. CACTACEÆ.
    - Sepals 5. Petals 5 or 10. Herbs hispid, with rigid or stinging hairs. 57. LOASACEÆ.

** *Stamens definite.*

- Filaments 3-adelphous: anthers long and sinuous.
  - Fruit a pepo. 60. CUCURBITACEÆ.
- Filaments bent downwards in æstivation: anthers opening by 2 pores. 52. MELASTOMACEÆ.
- Filaments distinct: anthers opening longitudinally.
  - Ovary many-seeded.
    - Placentæ 2, parietal. Fruit pulpy. Leaves alternate. 61. GROSSULACEÆ.
    - Placentæ in the axis. Capsule 2-celled. Petals 5. Stam. 10. 66. SAXIFRAGACEÆ.
      - Sepals and cells of the ovary 4. Petals and stamens 4 or 8. 56. ONAGRACEÆ.
  - Ovary with 1–2 seeds in each cell.
    - Leaves stipulate, opposite. Fruit indehiscent. 54. RHIZOPHORACEÆ.
    - Leaves stipulate, alternate. Capsule loculicidal. 67. HAMAMELACEÆ.
    - Leaves exstipulate, alternate. Flowers in umbels.
      - Styles 2 (rarely 3). Carpels separable. 68. UMBELLIFERÆ.
      - Styles 3–15 (rarely 2). Carpels mostly baccate. 69. ARALIACEÆ.
    - Leaves exstipulate, opposite (except one species of Cornus), or none.
      - Stamens alternate with the petals. Drupe baccate, 2-celled. 70. CORNACEÆ.
      - Stamens opposite the petals. Fruit fleshy 1-celled. 71. LORANTHACEÆ.
    - Leaves exstipulate, alternate, opposite, or whorled. Flowers not in umbels or cymes.
      - Style slender. Seed suspended. Trees. Flowers spicate. 55. COMBRETACEÆ.
      - Style slender. Seeds erect. Flowers racemose. 56. ONAGRACEÆ.
      - Stigmas 1–4, sessile. Seeds suspended.—Aquatics. Flowers sessile. 56. *Subord.* HALORAGEÆ.

ORDER I. RANUNCULACEÆ. *Juss.*

Sepals 3–6 or more, but usually 5, distinct, hypogynous, mostly deciduous: æstivation (except in Clematis) imbricated. Petals 3–13, hypogynous, sometimes deformed, occasionally absent. Stamens indefinite in number, hypogynous, distinct: anthers adnate or innate. Ovaries seated on the torus, numerous, sometimes few or solitary, distinct: ovules solitary or several. Carpels either dry achenia, or baccate, or follicular. Seeds anatropous, solitary or several. Embryo minute, near the base of horny or fleshy (and often more or less oily) albumen.—Herbs (rarely shrubby), with acrid transparent juice. Leaves alternate (opposite in Clematis) variously divided: petioles generally dilated at the base and partly clasping the stem.

TRIBE I. ANEMONEÆ.

Clematideæ and Anemoneæ, *DC.*

Petals plane or none. Anthers mostly extrorse. Achenia numerous, caudate or subulate with the style. Seed suspended.

I. CLEMATIS. *Linn.; DC. syst.* 1. *p.* 31.

Involucre none, or resembling a calyx, and situated next to the flower. Sepals 4 (4–8), colored, in æstivation valvate or with the edges bent inwards. Petals none, or shorter than the sepals. Anthers linear, extrorse. Achenia terminated by long (mostly plumose or hairy) tails.—Perennial herbaceous or somewhat shrubby plants, mostly sarmentose, with opposite leaves and fibrous roots.

§ 1. *Involucre none: petals none.*—CLEMATIS proper.

* *Stem herbaceous, erect.*

1. *C. ochroleuca* (Ait.): stem simple, silky-pubescent; leaves undivided, ovate, entire, silky beneath; flower solitary, terminal, pedunculate, inclined.—*Ait. Kew.* (*ed.* 1.) 1. *p.* 260; *Sims, bot. mag. t.* 1175; *Ell. sk.* 2. *p.* 45; *DC. prodr.* 1. *p.* 8. C. sericea, *Michx.! fl.* 1. *p.* 319; *Pursh, fl.* 2. *p.* 385.

β. leaves broadly ovate, very tomentose.

Banks of rivers and on mountains, New-York! to Georgia! *β*. North Carolina, *Schweinitz!* May–June.—Leaves reticulately veined, upper surface glabrous when old, subsessile; the upper ones rather acute. Flower yellowish, (erect in fruit). Sepals silky externally.—*β*. leaves larger, broadly ovate or roundish.

2. *C. ovata* (Pursh): stem simple; leaves broadly ovate, on very short petioles, glabrous, glaucous and reticulately veined beneath, the lower ones subcordate; peduncle terminal, solitary, 1-flowered; flower inclined.—*Pursh, fl.* 2. *p.* 736; *DC. prodr.* 1. *p.* 8.

Mountains of North Carolina, *Le Conte!* South Carolina, *Pursh*. Georgia or Florida, *Baldwin!*—Whole plant glabrous. Flower nearly as large as in C. ochroleuca, purple? Sepals ovate, acuminate, pubescent on the margin, a little exceeding the stamens.

3. *C. Baldwinii:* erect, simple or a little branching, slender, slightly pubescent; leaves varying from oblong to linear-lanceolate, entire or 3-cleft or lobed; the lobes linear, often slightly laciniate; peduncle terminal, elongated, 1-flowered; flower cylindrical-campanulate; carpels with very long plumose tails.

Pine woods, Tampa Bay, &c. Florida, *Dr. Baldwin! Dr. Hulse!*—Plant 1–1½ foot high. Leaves often quite simple, 4–6 lines wide, narrowed at the base into a short petiole. Peduncle 8–10 inches long. Sepals somewhat membranaceous, woolly on the margin, purplish externally, yellowish within. Tails of the carpels 2–3 inches long.

4. *C. Douglasii* (Hook.): stem simple, 1-flowered; flower nodding; leaves hairy, twice or thrice pinnatifid; segments linear, rather obtuse. *Hook. fl. Bor.-Am.* 1. *p.* 1. *t.* 1.

Rocky Mountains, near the sources of the Oregon. *Douglas.*—Stem 1 foot high, sparingly hairy, woolly at the joints. Sepals 4–5, deep purple within, paler externally, 1½ inch long, coriaceo-membranceous, oblong, erect, spreading at the apex, much longer than the stamens. *Hook.*

5. *C. Wyethii* (Nutt.): woolly; stem erect, simple, 1-flowered; flower nodding; leaves somewhat bipinnately divided; segments 3-cleft; lobes linear-lanceolate, attenuate, sparingly incised, rather acute. *Nutt.! in jour. acad. Philad.* 7. *p.* 6.

Rocky Mountains! June.—Stem 1½ foot high. Lower leaves nearly undivided. Sepals 4, thick, oblong-lanceolate, nearly straight, deep brown externally.—Very near C. Douglasii. *Nutt.*

*** Stem more or less shrubby, climbing by the petioles.*

6. *C. Virginiana* (Linn.): flowers panicled, often diœcious or polygamous; leaves ternate, glabrous; leaflets ovate, subcordate, incisely toothed and lobed; carpels with long plumose tails.—*Willd. sp.* 2. *p.* 1290; *Michx.! fl.* 2. *p.* 318; *Pursh! fl.* 2. *p.* 384; *DC. prodr.* 1. *p.* 4. C. Catesbyana, *Pursh, fl.* 2. *p.* 736? C. cordata, *Pursh, fl.* 2. *p.* 384; *DC. prodr. l. c.* excl. syn. *bot. mag.*

Canada to Georgia, and west to the Mississippi! July–August.—Climbing over shrubs and bushes, much branched, stem smoothish. Panicles trichotomously divided, with small leaves at the divisions. Sepals 4, white, obovate, exceeding the stamens.—A specimen named C. cordata by Pursh, in Barton's herbarium, seems to be only C. Virginiana.

7. *C. holosericea* (Pursh): flowers in paniculate corymbs, diœcious; leaves ternate, pubescent on both sides; leaflets oblong-lanceolate, entire. *DC. prodr.* 1. *p.* 5; *Pursh, fl.* 2. *p.* 384.

Carolina, *Walter* ex *Pursh*. Flowers small, white. Sepals linear, longer than the stamens. Tails of the carpels very long, feathered. *Pursh*.—Described by Pursh from specimens in Walter's herbarium. It seems to be a mere variety of C. Virginiana.

8. *C. ligusticifolia* (Nutt.! mss.): "plant somewhat pubescent; flowers in paniculate corymbs, diœcious; leaves pinnate and ternate; leaflets oblong, acute, mostly somewhat lanceolate-cuneate, incisely toothed and trifid; petals and stamens equal in length; carpels with long plumose tails.—C. Virginiana, *Hook. fl. Bor.-Am.* 1. *p.* 1. (in part).

"*β. brevifolia:* leaves smoother, shorter and broader.

"Plains of the Rocky Mountains, in open and in bushy places, near streams. *β.* in the Blue Mountains and on the borders of the Oregon.—Very similar to C. Virginiana, but the leaves are mostly 5-foliolate, and almost lucidly coriaceous; they are also much smaller, and in the var. *α.* much narrower and longer. The tails of the carpels are also longer, and more densely plumose in C. Virginiana. Flowers white and fragrant." *Nutt.*

9. *C. Drummondii:* flowers in paniculate corymbs, diœcious; leaves pinnate, silky-villous beneath, sparingly hirsute on the upper surface; leaflets rhombic-ovate, incisely 3-lobed, the lobes acute; sepals 4, oblong; carpels villous, with very long capillary plumose tails.

Texas, *Drummond!*—Stem slender, angular, somewhat hairy. Leaflets mostly 5, about an inch long; the lateral lobes sometimes a little toothed. Panicles about as long as the leaves, trichotomously divided. Sepals white, villous externally. Tails of the carpels very slender, more than two inches in length, densely plumose.—Seems to be nearly allied to C. sericea of Central America. (It is also closely related to C. Virginiana.)

10. *C. pauciflora* (Nutt.! mss.): "smooth; leaves pinnate and ternate; leaflets obovate, obtuse, mostly 3-lobed, the lobes short; flowers axillary, approximated, on short peduncles; carpels smooth, with slender plumose tails.

"Near the sea-coast of St. Diego, Upper California.—Climbing, but inclined to grow erect and bushy. Leaflets about an inch long and nearly as broad, commonly dilated and 3-lobed; petioles slightly pubescent. Peduncles slender, and so near together as to appear aggregated. Flower not seen. Carpels compressed; the tail rather sparingly pilose-plumose." *Nutt.*

11. *C. lasiantha* (Nutt.! mss.): "pubescent; leaves ternate, broadly ovate, obtusely cuneiform at the base; leaflets incisely toothed, the terminal one 3-lobed or trifid; flowers diœcious, solitary, on 2-leaved aggregated branchlets; sepals cuneate-oblong, spreading, villous on both surfaces; carpels......

"With the preceding.—Leaflets an inch and a half long and about an inch broad, almost villous beneath. Peduncles about three inches long, with a pair of entire or toothed leaflets near the base. Flowers more than an inch in diameter. Allied to C. orientale, but very distinct." *Nutt.*

12. *C. Viorna* (Linn.): peduncles 1-(rarely 2-3-) flowered; sepals connivent, thick, acuminate, reflexed at the apex; leaves glabrous, membranaceous, pinnate; leaflets entire or 3-parted, ovate or oblong; floral leaves entire; carpels with long plumose tails.—*Willd. sp.* 2. *p.* 1288; *Michx.! fl.* 1. *p.* 318; *Pursh! fl.* 2. *p.* 385; *Ell. sk.* 2. *p.* 46; *DC. prodr.* 1. *p.* 7. C. cordata, *Bot. mag. t.* 1816.

Pennsylvania! to Georgia! and west to Kentucky! May–Aug.—Leaves pinnate: the two lowest segments often ternate; leaflets variable, mostly acute, but sometimes obtuse. Peduncles axillary or terminal. Flower nodding. Sepals coriaceous, about an inch long, purple. Tails of the carpels an inch and a half long, very plumose.

13. *C. cylindrica* (Sims): peduncles 1-flowered; flower cylindrical-campanulate; sepals membranaceo-coriaceous, acuminate, with the margin undulate; leaves membranaceous, pinnate; leaflets ovate or ovate-lanceolate, petiolulate; carpels with plumose tails.—*Sims, bot. mag. t.* 1160; *Pursh, fl.* 2. *p.* 385; *Ell. sk.* 2. *p.* 475; *DC. prodr.* 1. *p.* 7. (excl. syn. *Michx.*?)

β. Walteri: leaflets linear and linear-lanceolate.—C. Walteri, *Pursh, fl.* 2. *p.* 384; *DC. prodr.* 1. *p.* 7; *Hook. in jour. bot.* 1. *p.* ~~88~~ 145

North Carolina! to Florida! and in Louisiana! June–Aug.—Flower larger than in C. Viorna, nodding. Sepals dilated above and acuminate, bluish purple. Leaflets mostly entire.—Pursh, who described his C. Walteri from specimens in Walter's herbarium, was probably mistaken in supposing the flower to be white.

14. *C. lineariloba* (DC.): peduncles 1-flowered; sepals very acute; leaves pinnate, smooth; leaflets entire or 3-parted; the segments linear. *DC. prodr.* 1. *p.* 7; *Deless. ic.* 1. *t.* 3.

South Carolina, *Fraser*.—Stem slender, glabrous. Leaflets 3–4 pairs; lobes all linear, scarcely 2–3 lines wide. Peduncles shorter than the leaves. Petals an inch long, about twice the length of the stamens. *DC.*—A doubtful species; probably only C. cylindrica *β.*

15. *C. reticulata* (Walt.): peduncles 1-flowered; sepals rather coriaceous; leaves pinnate; leaflets 4 pairs, oval, undivided or lobed, obtuse, rigidly coriaceous, conspicuously reticulated on both sides, glabrous; carpels with plumose tails.—*Walt. Car. p.* 156; *Pursh, fl.* 2. *p.* 385; *DC. prodr.* 1. *p.* 7; *Ell. sk.* 2. *p.* 47; *Michx.*! *fl.* 1. *p.* 318.

S. Carolina, Georgia! and Florida! May–Aug.—Leaflets all petiolulate, 1–1½ inch long, undivided or variously lobed; the lowest pair 3-parted, sometimes rather acute and mucronate. Peduncles longer than the leaves. Flower as large as in C. crispa. Sepals dull purple, ovate-lanceolate, velvety externally. Tail of the carpels long.

16. *C. crispa* (Linn.): peduncles 1-flowered, shorter than the leaves; leaves pinnate, ternate, or 3-lobed; leaflets very acute; sepals thick and coriaceous, with the apex reflexed, transversely undulated and crisped on the margin, twice as long as the stamens; carpels with a short, thick, naked (or pubescent) tail.—*DC. prodr.* 1. *p.* 9; *Sims, bot. mag. t.* 1892; *Ell. sk.* 2. *p.* 49; *Pursh, fl.* 2. *p.* 384; *Michx.! fl.* 1. *p.* 318.

Virginia to Florida! and west to Louisiana! May.—Leaves glabrous, or slightly hairy. Flowers a third smaller than in C. Viorna, bright purple. Tail of the carpels thick and rigid, about half an inch long.

17. *C. Pitcheri*: peduncles 1-flowered; leaves pinnate, coriaceous, reticulated; leaflets 2–4 pairs, ovate, mostly obtuse, undivided or 3-lobed; branch leaves simple, ovate; sepals coriaceous, a little longer than the stamens; carpels with a short pubescent tail.

On the Red River, Arkansas, *Dr. Pitcher! Nuttall!*—Leaves glabrous or slightly hairy beneath; the lowest pair 3-lobed, often subcordate. Sepals purple, about three-fourths of an inch long, reflexed at the summit, even on the margin. Tails of the carpels half an inch long, the lower part pubescent and almost plumose.

§ 2. *Involucre none: sepals* 4*: petals several, minute.*—ATRAGENE, *DC.*

18. *C. verticillaris* (DC.): peduncles 1-flowered; leaves verticillate in fours, ternate; leaflets petiolulate, ovate, acuminate, subcordate, entire or sparingly toothed; petals acute.—*DC. prodr.* 1. *p.* 10; *Hook. fl. Bor.-Am.* 1. *p.* 2. Atragene Americana, *Sims, bot. mag. t.* 887; *Pursh, fl.* 2. *p.* 384.

Mountains and rocky places, British America, north to lat. 54°. and west to the Rocky Mountains and N. W. Coast; Vermont! to North Carolina!

April–May.—Climbing. Flowers very large, campanulate. Sepals oblong-lanceolate, bright purplish-blue.

19. C. *Columbiana:* peduncles 1-flowered; leaves ternate; leaflets ovate, acute, obscurely crenulate; sepals ovate, acuminate, nearly twice the length of the stamens.—Atragene Columbiana, *Nutt. in jour. acad. Philad.* 7. *p.* 7.
Rocky Mountains, *Mr. Wyeth.* March.—Flowers smaller than in C. verticillaris, pale blue. *Nuttall.*

‡ *Doubtful species.*

20. C. *Plukenetii* (DC.): peduncles 1-flowered; leaves ternate, glabrous; leaflets elliptic or obovate, entire, obtuse; flowers diœcious, erect.—*DC. prodr.* 1. *p.* 7; *Pluk. alm.* 109.
Described by De Candolle from specimens of Catesby in Banks's herbarium, supposed to be from America.

2. ANEMONE. *Linn.; DC. syst.* 1. *p.* 188.

Involucre 3-leaved, distant from the flower; the leaflets variously incised. Sepals 5–15, petaloid. Petals none. Achenia mucronate (in § Pulsatilla caudate).—Perennial herbs with radical leaves. Scapes when branched bearing leaf-like involucres at each division.

§ 1. *Carpels with long bearded tails: leaves of the involucre sessile, palmately divided, with linear lobes.*—Pulsatilla, *DC.*

1. *A. patens* (Linn.): silky-villous; leaves 3-parted or ternate; segments cuneiform, 3-cleft, incised; lobes linear-lanceolate; involucre linearly many-cleft; sepals 5–6.—*DC. prodr.* 1. *p.* 16.–(β. ochroleuca); *Hook! fl. Bor.-Am.* 1. *p.* 4. A. Ludoviciana, *Nutt.! gen.* 2. *p.* 26. A. Nuttalliana, *DC. prodr. l. c. p.* 17; *Nutt. in jour. acad. Philad.* 5. *p.* 158. *t.* 8. *and* 7. *p.* 7; *Richards.! app. Frankl. journ.* (*ed.* 2.) *p.* 21. Clematis hirsutissima, *Pursh, fl.* 2. *p.* 385.
British America as far north as lat. 67°! Valleys of the Rocky Mountains, *Drummond, Nuttall!* On the Missouri and Platte, *Nuttall!* Galena, Illinois!—About a span high. Sepals an inch or more in length, dull blue or purple. Tail of the carpels nearly two inches long.—Appears to be identical with the European plant.

§ 2. *Carpels with long bearded tails: leaves of the involucre petioled, 3-cleft.*—Preonanthus, *DC.*

2. *A. alpina* (Linn.): somewhat silky-villous; leaves on long petioles, biternately pinnatifid; leaflets laciniate, with the segments linear, acute; those of the involucre similar; flower erect; sepals 6, spreading. *Hook. fl. Bor.-Am.* 1. *p.* 5; *DC. prodr.* 1. *p.* 17; *Bot. mag. t.* 2007. A. sulphurea, *Linn.* A. apiifolia, *Willd. sp.* 2. *p.* 126.
Eastern declivity of the Rocky Mountains, lat. 52°—55°, *Drummond;* Kotzebue's Sound, *Capt. Beechey.*—Flowers white, with a purplish tinge at the base. Stems from 6 inches to a foot and a half high. Heads of carpels very large. Tails long, very silky. *Hook.*—Inhabits also the mountains of Europe.

§ 3. *Carpels oval, without tails: pedicels solitary or in pairs (rarely more), all leafless and 1-flowered: leaves of the involucre sessile or petioled.*—Anemonanthea, *DC.*

3. *A. Caroliniana* (Walt.): root tuberous; leaves ternately divided; segments 3-cleft or incised; lobes linear and somewhat cuneiform, toothed at the apex; involucre very distant from the flower, 3-leaved; leaflets sessile, cuneiform, 3-cleft, with the lobes linear, divaricate, mostly entire; sepals 15–20, oblong or oblong-linear.—*Walt. Car. p.* 157; *Ell. sk.* 2. *p.* 53; *DC. prodr.* 1. *p.* 19. A. tenella, *Pursh! fl.* 2. *p.* 386; *Nutt.! gen.* 2. *p.* 21.

β. heterophylla: radical leaves 3-parted, or 3-lobed, or almost undivided; segments undivided or 3-lobed, roundish-oval, crenately serrate.—A. heterophylla, *Nutt.! mss.* Dry prairies, Illinois, [illegible]

North Carolina, *Schweinitz!* S. Carolina, *Walter;* Louisiana and Arkansas, *Dr. Pitcher! Dr. Leavenworth!* On the Platte, *Dr. James!* and Missouri, *Nuttall!* Texas, *Drummond! β.* on rocks, Arkansas, *Nuttall!* March–April.—Plant from 4–12 inches high, slender, clothed with a loose hairy pubescence. Leaves variable in the breadth of their segments and lobes, sometimes tripartite and very narrow. Flower an inch, sometimes an inch and a half in diameter: sepals white, often tinged or spotted with purple; the outer ones (6–8) thicker; the others petaloid, often almost linear. Head of carpels cylindrical-oblong, woolly. The flowers in *β.* are smaller and greenish, and the head of carpels cylindrical.—We are unable to discover any character that will distinguish this species from A. decapetala, *Linn.* of S. America. Hooker and Arnott (*in bot. of Beechey's voy. p.* 4. *t.* 1.) have indeed shown that the latter species sometimes bears several flowers on each scape, and hence they place it in the section Anemonospermos. In our Chilian specimens, however, the scapes are only 1-flowered, as usually described; and A. St. Hilaire (*fl. Bras. merid.* 1. *p.* 5.) who appears to know the plant well, makes no mention of the scapes bearing more than one flower. Illinois, [illegible]

4. *A. parviflora* (Michx.): leaves 3-parted; lobes cuneiform, 3-cleft, crenate, obtuse; those of the involucre nearly similar, but longer and narrower, sessile; sepals 6, oval. *Hook. fl. Bor.-Am.* 1. *p.* 5; *Michx. fl.* 1. *p.* 319; *DC. prodr.* 1. *p.* 19. A. cuneifolia, *Juss. ann. Mus.* 3. *p.* 248, *t.* 21. *f.* 1; *Pursh! fl.* 2. *p.* 386. A. borealis, *Richards. app. Frankl. journ. ed.* 2. *p.* 22.

Labrador! Canada to the Arctic Sea, lat. 70°; Kotzebue's Sound, *Beechey;* Anticosti, *Pursh!*—Plant 2–12 inches high. Flowers white tinged with blue. Heads of carpels rounded, compact, woolly.

5. *A. Baldensis* (Linn.): leaves nearly glabrous and somewhat fleshy, ternately divided; segments laciniately 3-parted, with the lobes linear, obtuse; those of the involucre similar, on short villous petioles; scape villous, 1-flowered; sepals 6, obtuse, spreading, with the lower surface somewhat hairy. *Hook. fl. Bor.-Am.* 1. *p.* 5; *DC. prodr.* 1. *p.* 19.

Rocky Mountains, lat. 52°—55°, *Drummond.*—Flowers tinged with blue. Root fusiform.—A native also of high mountains in Europe.

6. *A. nemorosa* (Linn.): leaves ternate; leaflets undivided, or with the middle one 3-cleft and the lateral ones 2-parted, incisely toothed, acute; those of the involucre similar, petioled; sepals 4–6, oval.—*Hook. fl. Bor.-Am.* 1. *p.* 6; *Michx.! fl.* 1. *p.* 319; *Pursh! fl.* 2. *p.* 387; *Ell. sk.* 2. *p.* 53; *DC. prodr.* 1. *p.* 20. A. lancifolia, *Pursh! fl. l. c.*; *DC. prodr. l. c.*

β. quinquefolia: lateral leaflets of the involucre 2-parted to the base.—A. quinquefolia, *Linn.*

Woods, very common, Canada! to Georgia, and west to the Rocky Mountains. April–May.—Plant 6–8 inches high. Sepals mostly 5, white or pale purple.

7. *A. deltoidea* (Hook.): sparingly hirsute; leaves ternate; leaflets (and those of the involucre) deltoid-ovate, undivided or 3-lobed, incisely serrate, acute, those of the involucre sessile; sepals 5–6, obovate, obtuse. *Hook.! fl. Bor.-Am.* 1. *p.* 6. *t.* 3. *f. A.*

Oregon River, near the sea, *Scouler! Nuttall!*—Plant 10–12 inches high. Radical leaves on long petioles rising from a filiform rhizoma. Flower solitary, on a long peduncle, as large as in A. Pennsylvanica, white.

8. *A. Richardsoniana* (Hook.): somewhat hairy; leaves reniform, 3–5-parted, lobes slightly 3-cleft, acutely toothed; those of the involucre roundish-cuneiform, sessile, 3-cleft and toothed; sepals 6, spreading; carpels compressed, glabrous; style long, deflexed, uncinate. *Hook! fl. Bor.-Am.* 1. *p.* 6. *t.* 4. *f. A. & in Richards. app. Frankl. journ. ed.* 2. *p.* 21.

Shores of Hudson's Bay, and Rocky Mountains from lat. 55° to 68°; also Unalaschka and throughout Siberia.—Plant 8–10 inches high. Radical leaves mostly springing from filiform rhizomas. Head of carpels large compared with the flower, depressed. Carpels numerous, oblong-ovate, terminated by a long slender deflexed style, the extremity of which is curved upward.

9. *A. cylindrica* (Gray): silky-pubescent; leaves ternately divided; lateral segments 2-parted, the intermediate one 3-cleft; lobes linear-lanceolate, with the apex incisely toothed; those of the involucre petioled; peduncles 2–6, rarely one; sepals 5, obovate, obtuse; carpels woolly, in a long cylindrical head. *Gray! in ann. lyc. New-York*, 3. *p.* 221.

Western part of the State of New-York, *Gray!*; near Boston, *Mr. Greene! Nuttall!* Bellows Falls, New Hampshire *Mr. Carey!* Michigan, *Dr. Folwell!* Indiana, *Darlington!* May–June.—Plant 1–3 feet high. Peduncles flowering simultaneously, subumbellate, 1-flowered, in fruit 8–12 inches in length. Leaves of the involucre 2–3 times the number of the peduncles. Sepals subcoriaceous, pale yellowish-green. Style very short. Head of carpels an inch in length.

§ 4. *Carpels without tails, subcompressed: pedicels several from each involucre, one of them leafless and 1-flowered, the others bearing a 2-leaved involucel.*—Anemonospermos, *DC.*

10. *A. Virginiana* (Linn.): leaves ternately divided; segments 3-cleft, acuminate, incisely serrate, those of the involucre and involucels similar, petioled; sepals 5, somewhat coriaceous, elliptical; head of carpels ovate-oblong, woolly.—*Michx.! fl.* 1. *p.* 320; *Pursh! fl.* 2. *p.* 388; *DC. prodr.* 1. *p.* 21; *Hook. fl. Bor.-Am.* 1. *p.* 7. *t.* 4. *f. B.*

Banks of rivers and in woods, Canada! (from lat. 55°) to South Carolina.—Plant 2–3 feet high, hairy. Peduncles elongated, 3–4 from each involucre. Sepals acute, pale yellowish-green, silky-pubescent beneath. Head of carpels three-fourths of an inch long, and half an inch in diameter. —We have a variety of this plant, found near Philadelphia by Mr. Durand, in which the flower is considerably larger than usual, the sepals nearly white, and several of them quite obtuse.

11. *A. multifida* (DC.): hairy; leaves ternately divided; segments cuneiform, laciniately 3-cleft, lobes linear, acute, those of the involucre and involucels similar, on short petioles; sepals 5–8, oval, obtuse.—*DC. prodr.* 1. *p.* 21; *Deless. ic.* 1. *t.* 16*?; Hook. fl. Bor.-Am.* 1. *p.* 7. A. Hudsoniana, *Richards. app. Frankl. journ. ed.* 2. *p.* 22.

β. Hudsoniana (DC. l. c.): stem 2-flowered; flower red.—A. sanguinea, *Pursh! in herb. Lamb.* A. Hudsoniana *β.* sanguinea, *Richards. l. c.*

γ. globosa: stem mostly 1-(sometimes 2–3-) flowered; head of carpels globose.—A globosa, *Nutt.*! *mss.*

Canada! and Arctic America; west to the Oregon. Shore of Lake Superior, *Dr. Pitcher!* Watertown, New-York, (var. Hudsoniana) *Dr. Crawe!* Vermont, *Dr. Robbins! Mr. Carey!* June. *γ*. Plains of the Platte and Valleys of the Rocky Mountains in lat. 42°, *Nuttall!*—About a foot high. Flower white, yellow, or purple, but mostly deep red. Head of pericarps oval, very woolly.—It is possible that the North American plant may prove to be a distinct species from A. multifida of the Straits of Magellan. The single-flowered variety figured in *Delessert*, *ic.* 1. *t.* 17, is so unlike the ordinary form, t. 16, that it can hardly belong to the same species.

12. *A. Pennsylvanica* (Linn.): somewhat hairy; leaves 3–5-parted; segments oblong, incisely toothed at the apex; involucre and involucels similar, 2-leaved, sessile; sepals 5, obovate; carpels hairy, compressed, margined, with a nearly straight persistent style.—*Pursh*, *fl.* 2. *p.* 387; *DC. prodr.* 1. *p.* 21; *Hook. fl. Bor.-Am.* 1. *p.* 8. *t.* 3. *f.* B. A. dichotoma, *Linn. amœn. acad.* 1. *p.* 155*; DC. prodr. l. c.; Pursh! fl. l. c.* A. aconitifolia, *Michx.! fl.* 1. *p.* 320.

Banks of rivers, in rocky places, Canada! to Pennsylvania! and north to Arctic America. Michigan! Ohio! June–July.—About 18 inches high. Radical leaves large, on long petioles. Flower an inch or more in diameter. Sepals white, membranaceous. Style longer than the ripe carpels, and when young, short and hooked.—We fully accord with Sir W. Hooker in uniting A. Pennsylvanica and A. dichotoma. Siberian specimens of the latter are taller and the flower smaller than in our plant, but in other respects there is no difference.

§ 5. *Carpels without tails, much compressed, roundish-oval, glabrous: pedicels several, umbelled, leafless, 1-flowered.*—Omalocarpus, *DC.*

13. *A. narcissiflora* (Linn.): villous; leaves palmately 3–5 parted; segments cuneiform, incisely many-cleft; lobes linear, acute; involucre somewhat similar, sessile, leaflets 3–5-cleft.—*Willd. sp.* 2. *p.* 1283; *Pursh, fl.* 2. *p.* 387; *DC. prodr.* 1. *p.* 21; *Hook. fl. Bor.-Am.* 1. *p.* 8.

Canada (*Pursh*) and N. W. America (*Menzies*) to Kotzebue's Sound. Unalaschka, *Fisher.*—Plant clothed with long silky hairs. Flowers white.

‡ *Doubtful species.*

14. *A. Walteri* (Pursh): root tuberous; stem 1-flowered, naked; leaves palmate, on long petioles; sepals 5. *Pursh, fl.* 2. *p.* 387. Thalictrum Carolinianum, *Walt. Car. p.* 157.

North Carolina, *Walter.*—Pursh found no specimen of this plant in Walter's herbarium, and it is quite unknown to all our botanists.

15. *A. pedata* (Raf.): stem short, 1-flowered; leaves pedately 5-parted, lobes laciniate; sepals 6. *Raf. in jour. bot.* 1. *p.* 230; *DC. prodr.* 1. *p* 22.

New Jersey, *Rafinesque.*—Probably A. nemorosa.

16. *A. minima* (DC.): involucral leaves 3-parted; lobes ovate, acuminate, serrate towards the apex; sepals 5, oval-oblong, obtuse. *DC. syst.* 1. *p.* 206.

Alleghany Mountains in Virginia, *P. de Beauvois.*—Probably also a variety of A. nemorosa.

3. HEPATICA. *Dill.; DC. syst.* 1. *p.* 215.

Involucre resembling a 3-sepalous calyx, very near the flower. Sepals petaloid, 6–9, in 2 or 3 rows. Petals none. Achenia without tails.—Involucre 1-flowered. Leaves radical, entire or 3-lobed.

1. *H. triloba* (Chaix): leaves broadly cordate, 3–5-lobed; lobes entire.—*Chaix in Vill. Delph.* 1. *p.* 336; *DC. prodr.* 1. *p.* 22; *Pursh, fl.* 2. *p.* 391; *Hook. fl. Bor.-Am.* 1. *p.* 8. Anemone Hepatica, *Linn.; Michx.! fl.* 1. *p.* 319.

α. *obtusa*: leaves 3-lobed; lobes roundish, obtuse. *Pursh, l. c.*—H. Americana, *Ker, in bot. reg. t.* 387; *DC. l. c.*

β. *acuta*: leaves 3–5-lobed; lobes spreading, acute. *Pursh, fl. l. c.*—H. acutiloba, *DC. l. c.*

Canada! to South Carolina; very common. Sitcha, *Bongard.* March–April.—Leaves coriaceous. Petals and scapes villous. Involucre villous; segments ovate, mostly obtuse. Sepals oblong, obtuse, blue, pale purple, or white.

4. ADONIS. *Linn.; DC. syst.* 1. *p.* 220.

Sepals 5, appressed. Petals 5–15, with a naked claw. Achenia spicate upon the elongated torus, tipped with the short style.—Herbs with pinnately-parted cauline leaves, the segments linear and numerous. Flowers solitary on the extremity of the stem or branches, yellow or red.

1. *A. autumnalis* (Linn.): calyx glabrous; petals 6–8, concave and connivent, a little longer than the calyx; carpels somewhat reticulated, collected into an ovate head, crowned with a very short style; stem branched. *DC. prodr.* 1. *p.* 23; *Hook. fl. Bor.-Am.* 1. *p.* 9.

Labrador, *Hooker;* near New Orleans, *Mr. Teinturier!* Banks of the Mississippi. *Nuttall!* "Genesee Flatts" [New-York,] *v. s.* in *herb. Muhl.* ①—Leaves three times compound, the segments scarcely a line wide. Flowers bright scarlet, as large as in Ranunculus acris.

TRIBE II. RANUNCULEÆ. *DC.*

Petals with a small nectariferous scale or gland at the base inside. Anthers extrorse. Seed erect, or sometimes suspended.

5. RANUNCULUS. *Linn.; DC. syst.* 1. *p.* 231.

Ranunculus & Casalea, *A. St.Hil.*

Sepals 5. Petals 5 (sometimes 10 or more), with a nectariferous scale or glandular spot on the inside of the claw. Stamens numerous, or sometimes few. Achenia ovate, pointed, compressed, disposed in cylindrical or roundish heads. Seed erect (rarely suspended).—Annual or perennial herbs. Leaves mostly radical, the cauline ones at the base of the branches and peduncles.

§ 1. *Carpels transversely wrinkled: petals white: claw yellow, with a conspicuous nectariferous pore.*—Batrachium, *DC.*

1. *R. aquatilis* (Linn.): stem floating; submersed leaves filiformly dissected; emersed ones 3-parted, with cuneiform dentate lobes; petals obovate, exceeding the calyx.—*Pursh, fl.* 2. *p.* 395; *DC. prodr.* 1. *p.* 26; *Hook. fl. Bor.-Am.* 1. *p.* 10.; *Darlingt.! fl. Cest. ed.* 2. *p.* 327.

α. *heterophyllus:* emersed leaves 3-parted. *DC. l. c.*—R. aquatilis, *Pursh, l. c.*

β. *capillaceus:* leaves petioled, all immersed and filiformly dissected. *DC. l. c.; Hook. l. c.*—R. pantothrix, *DC. syst.* 1. *p.* 235; *Ell. sk.* 2. *p.* 57. R. fluviatilis, *Willd. sp.* 2. *p.* 1333; *Pursh, l. c.*

γ. *cæspitosus:* leaves petioled, all emersed, with a nearly orbicular circumscription, filiformly dissected, the segments rigidly divergent; base of the petiole broad, sheathing and auricled. *DC. l. c.; Hook. l. c.*

δ. *stagnalis*: leaves sessile, all immersed, filiformly dissected, circinnate; segments short; sheaths obscurely auricled; carpels rather acute, nearly smooth. *DC. l. c.; Hook. l. c.*

Ponds and rivers, Arctic America to South Carolina, and west to the Rocky Mountains! and Columbia River! California, (*Hook & Arn.* in bot. Beechey's voy.) June–Aug.—Stem long, slender, jointed. Leaves dichotomously or trichotomously divided. Flowers smaller than those of R. acris. Calyx glabrous.—We have never seen American specimens of Var. α. Var. γ and δ, British America, *Hooker.*

§ 2. *Carpels smooth (not wrinkled), ovate or subrotund, in roundish heads: root fibrous.*—Hecatonia, *DC.*

* *Leaves divided: flowers white.*

2. *R. glacialis* (Linn.): radical leaves petioled, palmately 3-parted or 3-cleft; lobes rather obtuse and thick; stem about 1-flowered; calyx very hirsute; carpels compressed, margined. *DC. prodr.* 1. *p.* 30.

Greenland.

** *Leaves all undivided: flowers yellow.*

3. *R. Flammula* (Linn.): leaves smooth, linear-lanceolate or ovate-lanceolate, often denticulate; stem declined, more or less rooting at the lower joints; peduncles opposite the leaves; carpels smooth, with a distinct subulate beak; petals much longer than the calyx.—*DC. prodr.* 1. *p.* 32; *Pursh, fl.* 2. *p.* 391; *Darlingt.! fl. Cest. p.* 327.

β. *laxicaulis:* stem weak, much branched; leaves all entire; lowest ones elliptical-oblong, upper ones linear; petals oblong, attenuate at the base, three times as long as the calyx.

Inundated places, ditches, &c. Canada! to North Carolina. β. Milledgeville, Georgia, *Dr. Boykin!* July.—Whole plant glabrous. Stem 1–2 feet long, a little branched; leaves 3–6 inches long, 4–8 lines broad, those of the stem acute at each end; lower ones petioled, more or less obtuse at the base. Peduncles 1–2 inches long. Flowers 4–5 lines in diameter. Head of carpels globose. Beak two-thirds the length of the carpel.

4. *R. reptans* (Linn.): leaves linear or lanceolate-linear, acute at each end, glabrous, entire; stem creeping (rooting at the joints); carpels glabrous, puncticulate, with a minute blunt point.—*DC. prodr.* 1. *p.* 32.

β. *ovalis,* (Bigel.): leaves oval and lanceolate; petals 5–10. *Bigel. l. c.*

γ. *intermedius* (Hook. !) stem creeping, slender, leaves narrow, lanceolate, the upper ones linear; flower middle sized.

δ. *filiformis* (DC.): stem filiform, creeping extensively, leaves linear; flowers small.—R. filiformis, *Michx.! fl.* 1. *p.* 320; *Pursh, fl.* 1. *p.* 392; *Bigel. fl. Bost. ed.* 2. *p.* 224.

Banks of rivers and low grounds, Labrador and Canada to New-York! west to Oregon! June–August.

Sir W. Hooker refers R. reptans to R. Flammula, and should we have adopted his views were it not for the difference in the carpels of the two species. The most common variety throws out numerous filiform stems, producing leaves and roots at the joints. Leaves mostly very narrow; but in β. and γ. inclining to lanceolate or even ovate. Flowers in β. about a third of an inch in diameter, in the other varieties smaller. Petals obovate. Carpels roundish-ovate, the beak very short and oblique.

5. *R. pusillus* (Poir.): leaves all on long petioles; lower ones ovate, subcordate, entire or sparingly toothed; upper ones linear-lanceolate; stem erect or decumbent; petals mostly 3 (sometimes 1–5), as long as the calyx; carpels ovate, with a minute blunt point.—*Poir. dict.* 6. *p.* 99; *Pursh, fl.* 2. *p.* 312; *Ell. sk.* 2. *p.* 58; *DC. prodr.* 1. *p.* 32; *Deless. ic.* 1. *t.* 28. R. Flammula, *Michx.! fl.* 1. *p.* 321; *Walt. Car. p.* 159.

β. *denticulatus:* leaves acutely and remotely repand-denticulate, lowest ones ovate-lanceolate; those of the stem lanceolate-linear; flowers minute; carpels roundish-ovate.

γ. *muticus:* resembling α. but the carpels very smooth and without any beak; flowers very small.

δ. *oblongifolius:* leaves petiolate, denticulate, lower ones oblong-oval, upper ones linear-lanceolate; petals a little longer than the calyx; carpels globose, not pointed, smooth.—R. oblongifolius, *Ell. sk.* 2. *p.* 58.

Boggy places. Var. α. North Carolina! to Georgia. β. Texas, *Drummond!* γ. New York! to Pennsylvania. δ. near Savannah, Georgia! *Elliott!*—The varieties γ. and δ. may prove to be distinct species.—This species would be referred to Casalea, *St. Hil.*

6. *R. Cymbalaria* (Pursh): stoloniferous; leaves cordate-ovate or reniform, petioled, obtuse, coarsely crenate; scape 1–3-flowered; petals spatulate, rather longer than the calyx.—*Pursh! fl.* 2. *p.* 392; *Hook. fl. Bor.-Am.* 1. *p.* 11. R. Cymbalaria β. Americana, *DC. prodr.* 1. *p.* 33.

β. *alpinus:* very small; leaves 3-toothed at the apex; scape 1-flowered.—R. halophyllus, *Schlecht. animad. bot.?* (fide *Hook.*)

Arctic Sea, lat. 68°, to the coast of New-Jersey! Salina, New-York! Salt plains of the Platte, *Dr. James!* Banks of the Oregon and neighbouring streams, as well as on the contiguous coast of the Pacific, *Nuttall!* β. Summits of the Rocky Mountains, *Drummond.*, &c. August—Scapes 2–6 inches high, with one or two minute linear leaves. Stolons extensively creeping. Leaves glabrous, somewhat fleshy, roundish-ovate or oblong. Sepals oval, concave. Petals 5–8. Carpels ovate, acute, compressed, with several elevated ribs, disposed in dense oblong heads.—Very near R. salsuginosus, *Pall.* The Siberian plant is commonly smaller than the North American variety, but in other respects there is no essential difference.

*** *Leaves more or less divided: flowers yellow.*

7. *R. Pallasii* (Schlecht.): stem creeping, fistulous; leaves oval or obovate, cuneiform, 3-parted; sepals 3; petals 8; head of carpels spherical; carpels thick, ovate, glabrous, beaked. *Schlecht. animad. bot.* 1. *p.* 15. *t.* 2; *Hook. fl. Bor.-Am.* 1. *p.* 10.

On the western shore of extreme Arctic America, beyond Behring's Straits. *Chamisso.*—Allied to Ficaria.

8. *R. auricomus* (Linn.): leaves glabrous, radical ones petioled, cordate, mostly 3-parted or lobed; cauline ones divided into linear entire or slightly toothed lobes; calyx pubescent, shorter than the petals. *DC. prodr.* 1. *p.* 33.

Greenland.—Pursh records this species as a native of Pennsylvania, but no other botanist has found it in any part of the United States.

9. *R. affinis* (R. Brown): radical leaves petioled, pedately multifid; cauline ones subsessile, digitate, with linear lobes; stem erect, few-flowered and, with the calyx and ovaries, pubescent; carpels with a recurved beak, disposed in oblong-cylindrical heads. *R. Br. in Parry's* 1*st voy. app. p.* 265; *Hook. fl. Bor-Am.* 1. *p.* 12.

α. petals twice as long as the calyx. *Hook. l. c. t.* 6. *A.*—R. affinis, *R. Br. l. c; Richards. in Frankl.* 1*st jour. app. ed.* 2. *p.* 23; *Hook. in Parry's* 2*nd voy. app. p.* 384. R. arcticus, *Richards. l. c. ed.* 1.

β. petals a little shorter than the calyx, or none; lower leaves more or less divided. *Hook. l. c. t.* 6. *A. b.*

γ. the exterior radical leaves suborbicular, undivided. *Hook. l. c.*

Canada to the Arctic Sea, and from long. 95° to the western declivity of the Rocky Mountains. Kotzebue's Sound, *Hook.* β. & γ. Melville Island and shore of the Arctic Sea, *Hook.*—Very near R. auricomus. *Brown.*

10. *R. ovalis* (Hook.): pubescent; radical leaves oval, cordate or truncate at the base, undivided, rarely crenately 3-lobed; cauline ones subsessile, digitate, with the lobes all linear; stem erect, many-flowered; calyx pubescent, as long as the corolla; heads of carpels globose. *Hook. fl. Bor.-Am.* 1. *p.* 13. *t.* 6. *f. B*; *Raf. in Desv. jour. bot.* 2. *p.* 268?; *DC. prodr.* 1. *p.* 43?

Rocky Mountains, lat. 52°, and about Carlton House.—Root fasciculately fibrous. Radical leaves crenate, undivided, trifid, or pedately palmate. Sepals spreading, at length reflexed. Petals oval. Carpels as in R. affinis.

11. *R. brevicaulis* (Hook.): pubescent; radical leaves all undivided, cordate-oval, crenate, cauline ones palmately many-cleft; stem much shorter than the leaves, erect, many-flowered; heads of carpels globose; petals 6. *Hook. fl. Bor.-Am.* 1. *p.* 13. *t.* 7. *A.*

Shores of Lake Huron, *Drummond;* Fort Gratiot, St. Clair River, *Dr. Pitcher!*—Plant 2–6 inches high. Leaves on long petioles, large in proportion to the size of the plant. Flower about half an inch in diameter.—Probably only a variety of the preceding species.

12. *R. rhomboideus* (Goldie): hirsutely pubescent; radical leaves ovate-rhomboid, undivided, serrate (or crenate), cauline ones palmate, floral ones deeply laciniate; sepals spreading, pilose; head of carpels globose, glabrous, with an extremely short beak.—*Goldie, in Edinb. phil. jour.* 6. *p.* 329. *t.* 11. *f.* 1; *Hook. fl. Bor.-Am.* 1. *p.* 12.

Canada, *Goldie, Denke!* Near Montreal, *Dr. Holmes!*—Stem 3–6 inches high, branching above. Radical leaves orbicular-ovate, rhomboidal or obovate-cuneiform. Petals 5, oblong-obovate, longer than the sepals.

13. *R. cardiophyllus* (Hook.): hirsutely pubescent; radical leaves round-cordate, with the base rather deeply emarginate, undivided or many-cleft; cauline ones palmately many-cleft; the lobes linear, incisely crenate; petals broadly oval, very obtuse, twice as long as the spreading sepals; head of carpels oblong.—*Hook. fl. Bor.-Am.* 1. *p.* 14. *t.* 5. *f. B*; *Nutt. in jour. acad. Philad.* 7. *p.* 8.

Canada to lat. 55°; Rocky Mountains, *Drummond;* Flat-Head River, N. W. America, *Mr. Wyeth.*—Stem 1 foot high, robust. Stem-leaves nearly sessile. Carpels numerous, roundish, small, terminated with a minute rather long hooked style. Flowers golden yellow, as large as in R. bulbosus. *Hook.*—This and the four preceding species are nearly allied, and all of them, with the exception of R. rhomboideus, may be, as Hooker suspects, only varieties of R. auricomus. They all have fibrose-fasciculate roots.

14. *R. micranthus* (Nutt.! mss.): "hairy, dwarf, (small-flowered); leaves petiolate, somewhat rhombic-ovate, crenate, some of them 3-parted or 3-cleft; cauline ones subsessile, with 3 to 5 linear-oblong divisions; sepals with a broad membranaceous border, as long as the corolla.

"Margin of ponds throughout the upper and western part of Missouri; likewise in Arkansas, collected by Dr. Pitcher." *Nuttall!*—Distinguished from R. abortivus, which it much resembles, by the constant hairiness of the stem, calyx, and petioles, as well as by the very different form of the primary leaves. "From R. ovalis it differs in the flower being less than half as large, and also by the shorter radical leaves with much fewer serratures." *Nutt.*

β.? Californicus: stem very short; leaves much crowded; primary ones reniform-cordate, cauline trifoliolate; the leaflets on long petioles, 2–3 lobed.

California, *Douglas!*—Stem short and thick, scarcely 2 inches high. Leaves nearly glabrous, except a little hairiness on the margin, the petioles pubescent. Flower subsolitary, as large as in R. abortivus.—We have but a solitary and rather imperfect specimen of this plant, and are therefore unable to determine whether it is a distinct species, or a mere variety of R. micranthus.

15. *R. glaberrimus* (Hook.): leaves all (except the uppermost) petioled; radical ones roundish, entire or coarsely 3-toothed; cauline ones somewhat cuneiform, 3-cleft; petals twice as large as the oval spreading sepals; heads of carpels globose. *Hook. fl. Bor.-Am.* 1. *p.* 12. *t.* 5. *A; Nutt.! in jour. acad. Philad.* 7. *p.* 7.

Rocky Mountains near perpetual snow, *Douglas;* Wallawallah River, &c. *Nuttall!*—Roots fibrose-fascicled. Whole plant very glabrous, somewhat succulent. Stem a span high, 1–3-flowered. Cauline leaves 3-cleft; segments lanceolate, obtuse, entire. Corolla half an inch in diameter. Petals 5, oval, twice the length of the calyx.

16. *R. abortivus* (Linn.): glabrous and very smooth; radical leaves petioled, reniform or broadly ovate and subcordate, crenate, sometimes 3-cleft; cauline ones 3–5-parted, with linear-oblong nearly entire segments; sepals reflexed, longer than the petals; head of carpels globose or ovate.—*Willd. sp.* 2. *p.* 1334; *Pursh! fl.* 2. *p.* 392; *DC. prodr.* 1. *p.* 34; *Hook. fl. Bor.-Am.* 1. *p.* 14. (excl. *β.*) R. nitidus, *Walt. Car. p.* 159?; *Pursh! l. c.*

Newfoundland, and Canada lat. 57°, to S. Carolina! west to Arkansas! and the Rocky Mountains; in rocky woods. April–June.—Root fibrose-fascicled. Stem simple or branching. Flowers 2–3 lines in diameter. Sepals oval, obtuse, colored. Petals pale yellow, with a conspicuous truncate scale. Carpels roundish, margined, with a very short straight style (or sometimes with a long and stout recurved mucro. *Hook.*)—Near R. auricomus, but a smoother plant with much smaller flowers. Var. *β.* of Hooker is perhaps a form of that species.

17. *R. sceleratus* (Linn.): glabrous; leaves petioled, 3-parted; radical ones with the divisions 3-lobed and obtusely incised; the upper cauline ones with oblong-linear nearly entire lobes; sepals reflexed, about equal to the petals; carpels minute, disposed in oblong-cylindrical heads.—*Willd. sp.* 2. *p.* 1315; *Pursh! fl.* 2. *p.* 293; *DC. prodr.* 1. *p.* 34; *Ell. sk.* 2. *p.* 59; *Hook. fl. Bor.-Am.* 1. *p.* 15.

β. multifidus (Nutt.! mss.): "leaves much divided; flowers larger; head of carpels ovate, thick."

In ditches, &c. Canada! (lat. 67°) to S. Carolina. *β.* Ponds of the Platte, *Nuttall!*—Stem thick and succulent, fistulous, very leafy. Flowers small, pale yellow. Carpels very numerous, scarcely pointed. *β.* About a span high, more slender; the head of carpels much shorter and thicker.

18. *R. Purshii* (Richardson): submerged leaves filiformly 2–3-chotomously dissected, with the segments flat; emersed ones reniform, 3–5-parted, the lobes variously divided; petals twice as large as the reflexed sepals; carpels in globose heads, smooth, with a short and straight ensiform style.—*Hook.! fl. Bor.-Am.* 1. *p.* 15.

α. leaves all filiformly dissected (flowers as large as in R. acris); stem fistulous. *Hook. l. c.*—R. multifidus, *Pursh ! fl.* 2. *p.* 736; *DC. l. c.* R. aquaticus, flore flavo, foliis infimis tenuissime divisis &c., *Clayt. ! Virg. ed.* 2. *no.* 885. R. fluviatilis, *Bigel. fl. Bost. ed.* 1. *p.* 139. R. delphinifolius, *Torr. in. Eat. bot. ed.* 3. (1822) *p.* 424. R. lacustris, *Beck & Tracy in Eat. l. c. p.* 423, *& in trans. Albany inst.* 1. *p.* 148. *t.* 5.

β. submersed leaves filiformly dissected; floating ones reniform, palmately many-cleft. *Hook. l. c. t.* 7. *B. f.* 1.

γ. creeping; lower leaves many-cleft, with linear segments; the upper ones reniform, palmately many-cleft. *Hook. l. c. t.* 7. *B. f.* 2.—R. Purshii α. *Richards. ! in app. Frankl. journ. ed.* 2. *p.* 23.

γ. creeping; leaves all round-reniform, palmately 3–5-cleft. *Hook. l. c. t.* 7. *B. f.* 3.—R. Purshii β. *Richards. l. c.* R. Gmeleni. *DC. prodr.* 1. *p.* 35. (excl. syn.) R. Langsdorfii, *DC. l. c.*

In ponds and muddy places, from extreme Arctic America to N. Carolina! Louisiana! Ohio! &c. West to the Rocky Mountains! and Kotzebue's Sound. May–July.—Flowers bright yellow.

19. ***R. limosus.*** (Nutt.! mss.): "subaquatic, procumbent, somewhat hairy; leaves reniform, palmately 5-cleft, the segments 2–3-toothed or somewhat lobed; the divisions blunt, short and shallow; stem 1–2-flowered; sepals shorter than the rounded petals; carpels scarcely keeled, with a short nearly straight beak.

"Margins of ponds in the eastern ranges of the Rocky Mountains, Lewis's River, &c. Near R. Purshii γ. *Hook.?*" *Nutt.*—It appears scarcely to differ, except in the pubescence, from some of the numerous varieties of R. Purshii.

20. ***R. Lapponicus*** (Linn.): leaves glabrous; radical ones on long petioles, 3-parted, with the lobes dilated, obtuse, coarsely toothed; scape 1-flowered, (sometimes 1-leaved,) longer than the leaves; sepals 3, reflexed. *DC.*—*Linn. fl. Lapp. t.* 3. *f.* 4; *DC. prodr.* 1. *p.* 35; *Hook. fl. Bor.-Am.* 1. *p.* 16.

Arctic America, from lat. 50° to the Arctic Sea. Kotzebue's Sound, *Hook. & Arn. in Bot. Beechey.*—Petals 6 (8, Schlecht.), spatulate. Carpels 6–10, in roundish heads. Allied to Ficaria. *Hooker.*

21. ***R. hyperboreus*** (Rottbœll): leaves glabrous, petioled, 3-cleft; lobes oblong-oval, divaricate, the lateral ones somewhat 2-cleft, the middle one undivided; sheaths with the base biauriculate; stem filiform, creeping. *DC.*—*Fl. Dan. t.* 331; *DC. prodr.* 1. *p.* 35; *Hook. fl. Bor.-Am.* 1. *p.* 16. R. Gmeleni, *Schlecht. animad. bot.* 2. *p.* 85. (fide *Hook.*)

Arctic America.—Heads globose, compact; carpels distinctly margined on the back. *Hooker.*—Allied to R. Cymbalaria, but distinguished by its trifid leaves. *DC.*

22. R. ***pygmæus*** (Wahl.); leaves glabrous, 3–5-cleft, radical ones petioled, cauline ones sessile; stem 1-flowered; calyx glabrous, longer than the somewhat reflexed petals; carpels roundish, pointed with a short hooked style. *DC.*—*Wahl. fl. Lapp. p.* 157. *t.* 8. *f.* 1; *Pursh, fl.* 2. *p.* 393; *DC. prodr.* 1. *p.* 35; *Hook. ! fl. Bor.-Am.* 1. *p.* 17.

Coast of Arctic America! and Rocky Mountains in lat. 55°. Spitzbergen! Unalaschka! Kotzebue's Sound, *Hook. & Arn. in bot. Beechey.* Labrador, *Pursh*, and herb. *Schweinitz !*—Stem erect, never creeping, 1–2 inches high. Heads oblong. Carpels subglobose, not margined at the back. *Hooker.*—Intermediate between R. hyperboreus and nivalis. *DC.*

23. ***R. Sabinii*** (R. Brown): radical leaves on long petioles, 3-parted; lobes elliptical, the lateral ones 2-cleft; cauline ones sessile, 3-parted, the divisions linear; calyx hirsute, nearly equal to the retuse petals. *R. Br. in Parry's 1st voy. app. p.* 264; *Hook. fl. Bor.-Am.* 1. *p.* 17.

Melville Island and Shores of the Arctic Sea.—Very near R. nivalis. *R. Br.*

24. R. ***nivalis*** (R. Brown); radical leaves on long petioles, dilated, lobed;

the lobes somewhat ovate; cauline ones nearly sessile, palmate; stem erect, about 1-flowered; calyx very hirsute, shorter than the obovate entire petals; style nearly straight, as long as the glabrous ovaries. *R. Br. l. c.; Hook.! l. c.*

α. radical leaves reniform, deeply lobed; the middle lobe cuneiform-obovate, narrowed at the base. *R. Br.*—R. nivalis, *Linn.; DC. prodr.* 1. *p.* 35.

β. radical leaves cuneiform at the base, lobed scarcely to the middle; the middle lobe semi-ovate, broad at the base; petals round-obovate, once and a half the length of the very hirsute calyx. *R. Br.*—R. sulphureus, *Soland.; Schlecht. animad. bot.* 2. *p.* 15.

γ. radical leaves somewhat cuneiform at the base, or deeply lobed transversely; the middle lobe cuneiform-obovate, narrower at the base. *R. Br.*

Arctic America! and from Labrador! and Spitzbergen! to Kotzebue's Sound (*Beechey*), and the Rocky Mountains, lat. 55°.

25. ***R. Eschscholtzii*** (Schlecht.): leaves ciliate; radical ones petioled, 3-parted, the divisions lobed; stem about 1-flowered; calyx hirsute, shorter than the petals; carpels obliquely ovate, terminated by a short style. *DC.*—*Schlecht. animad. bot.* 2. *p.* 16. *t.* 1; *DC. prodr.* 1. *p.* 35; *Hook. fl. Bor.-Am.* 1. *p.* 18.

β. petals abortive or very small. *Hook. l. c.*

Unalaschka, &c. N. W. America. *β.* Rocky Mountains, lat. 52°–56°.—Near R. nivalis.

26. ***R. pedatifidus*** (Smith): leaves minutely pubescent; the radical ones petioled, palmately or pedately divided, with the lobes linear and entire; scape erect, nearly naked, 1–2-flowered; calyx spreading, somewhat villous. *Hook.*—*Smith, in Rees's cycl.; DC. prodr.* 1. *p.* 36; *Hook. l. c. t.* 8. *B.*

Rocky Mountains, lat. 52°–55°.—Leaves somewhat ciliate. Scape 1-leaved, 3 inches high. Carpels disposed in a roundish head, ovate, attenuate into a recurved style which is scarcely as long as the fruit. *Hook.*

27. ***R. acris*** (Linn.): leaves pubescent or somewhat glabrous, 3–5-parted, with the segments deeply and laciniately trifid; lobes lanceolate, acute, the uppermost linear; stem many-flowered; peduncles terete; calyx spreading, villous; carpels roundish, compressed, terminated with a short recurved style.—*Pursh, fl.* 2. *p.* 394; *DC. prodr.* 1. *p.* 36; *Hook. fl. Bor.-Am.* 1. *p.* 18.

β. hairy; petals oblong, 10–14.—R. Deppii, *Nutt.! mss.* = R. Ca [illegible]

Meadows and pastures, Hudson's Bay to Pennsylvania! *β.* California, *Nuttall!* June.—Stem 1–2 feet high, hirsute, with the pubescence appressed or spreading; sometimes nearly glabrous. Flowers large.—*Butter-cups.*

28. ***R. repens*** (Linn.): stems sending off from the base long prostrate or creeping branches; leaves trifoliolate; leaflets cuneiform, 3-lobed, incisely toothed, the middle one (and generally the lateral one also) petiolulate; peduncles sulcate; calyx spreading; carpels with a broad rather straight point. —*DC. prodr.* 1. *p.* 38; *Pursh, fl.* 2. *p.* 394; *Darlingt. fl. Cest. ed.* 2. *p.* 329. R. prostratus, *Poir. dict.* 6. *p.* 113. R. intermedius, *Eat! man. ed.* 3. R. Clintonii, *Beck, fl. p.* 7. R. fascicularis, *Bart. fl. Philad.* 2. *p.* 25. R. nitidus, *Muhl. cat. ed.* 2. *p.* 56; *Ell. sk.* 2. *p.* 60; *Hook. fl. Bor.-Am.* 1. *p.* 20. (excl. syn. *DC.*)

β. linearilobus (DC.): prostrate; stems very long, floriferous; lobes of the leaves very narrow.

γ. Marilandicus: stem and petioles densely hirsute with rather soft hairs; leaflets distinctly petiolulate.—R. Marilandicus, *Poir. dict.* 6. *p.* 126; *DC. syst.* 1. *p.* 291; *Pursh! l. c.*

Wet shady places, particularly along rivers, Canada! to Georgia! and west to the Pacific! γ. Pennsylvania to Kentucky!—May–July.—Stems at length 1–4 feet long, commonly prostrate, and often rooting; the earliest flowering ones erect; usually hairy below, but often nearly smooth. Leaves with the petioles more or less pilose. Peduncles 1–3 inches long. Flowers middle sized (in specimens from Oregon smaller). Carpels in a globose head, margined, suborbicular, pointed with a short beak, which is nearly straight or somewhat incurved. A variable plant; the stem being procumbent or erect; the flowers sometimes much smaller, sometimes larger than in R. acris, and the leaves presenting much diversity of form and lobing.—Pursh's specimen of this plant in Lambert's herbarium is labelled in the hand-writing of De Candolle.

29. ***R. hispidus*** (Michx.): stem erect, branching and, with the petioles, very pilose with stiff spreading hairs; leaves trifoliolate or 3-parted; segments oval, acute, laciniate; pedicels with the pubescence appressed; calyx appressed; carpels smooth, pointed with a very short style.—*DC. prodr.* 1. *p.* 38; *Michx.! fl.* 1. *p.* 321; *Ell. sk.* 2. *p.* 62. R. Belvisii, *DC. l. c.* R. Pennsylvanicus, *Pursh! fl.* 2. *p.* 393.

Shady rich soils, often in very wet places, New Jersey! to S. Carolina! and west to Oregon. May–July.—Stem 1½–2 feet high, widely branching, rather naked above. Leaves very hairy, often divided nearly to the base into many acute segments. Flowers as large as in R. acris.

30. ***R. occidentalis*** (Nutt.! mss.): "hirsute with shining spreading hairs; leaves trifid or 3-parted; segments cuneate and trifid, or incisely toothed, the lateral ones often subdivided; the uppermost leaves trifid, with linear acute segments; stem divaricate, many-flowered; sepals reflexed, half as long as the elliptical-oblong petals; carpels smooth, much compressed, with the revolute style nearly their own length."—R. recurvatus, *Bong.! veg. Sitcha, in mem. acad. St. Petersb.* (6 *ser.*) 2. *p.* 123. (excl. syn.); *Hook.! fl. Bor.-Am.* 1. *p.* 20. (in part.)

Plains of the Oregon River, near woods, *Nuttall! Dr. Scouler!*; Sitcha, *Bongard!*—Root composed of fasciculate fibres. Stem slender, about a foot high, somewhat branching, rather naked, densely clothed with shining brown hairs. Leaves scarcely more than an inch in length and breadth. Flowers when expanded 8–10 lines in diameter. Carpels slightly hairy, margined; the beak, when mature, so much recurved as to be revolute.—Nearly related to R. lanuginosus of Europe, but differs in its slender naked stems, smaller leaves and flowers, narrow petals, &c.—We refer to this species R. recurvatus of Hooker, in part, because we have specimens under that name from Dr. Scouler, collected in Oregon.

31. ***R. Pennsylvanicus*** (Linn.): stem and petioles pilose-hispid with spreading hairs; leaves ternate, villous, with the hairs appressed; lower ones on long petioles, the leaflets petiolulate; lobes lanceolate, incised; calyx reflexed, longer than the small petals; heads oblong or somewhat cylindrical; carpels pointed with a very short straight style.—*DC. prodr.* 1. *p.* 40; *Ell. sk.* 2. *p.* 63; *Hook. fl. Bor.-Am.* 1. *p.* 19. R. Canadensis, *Jacq. ic. rar.* 1. *t.* 165. R. hispidus, *Pursh! fl.* 2. *p.* 395.

Wet places, Maine! Michigan! New-York! to Georgia. British America, west to the Pacific. June–Aug.—Whole plant hispidly pilose. Stem stout and erect, 1–2 feet high, branching. Flowers very small.

32. ***R. recurvatus*** (Poir.): erect; stem and petioles clothed with spreading somewhat stiff hairs; leaves 3-parted, villous with appressed hairs or nearly glabrous; segments broadly oval, incisely toothed, the lateral ones 2-lobed; calyx reflexed; petals narrowly oblong, shorter than the sepals (sometimes abortive); heads ovate-globose; carpels with a short hooked style. —*Poir. dict.* 6. *p.* 123; *Pursh, fl.* 2. *p.* 394; *DC. prodr.* 1. *p.* 39; *Deless. ic.* 1. *t.* 41; *Ell. sk.* 2. *p.* 63; *Hook.! fl. Bor.-Am.* 1. *p.* 20. (in part.)

β. *Nelsonii* (DC.): lobes of the leaves appoximate; pedicels approximate; pubescence of the pedicels appressed. *Hook. l. c.*
γ. stem and leaves nearly glabrous. *Hook. l. c.*
δ. stem and petioles retrorsely and hispidly pilose with reddish hairs; pedicels very short; petals often abortive.

Shady rich soils, Labrador to Georgia! δ. Oregon River, *Dr. Scouler!* β. Unalaschka. γ. Oregon and Canada. May–June.—About a foot high. Leaves 2–3 inches in diameter, the outline pentangular, all of them petiolate; lobes dilated, coarsely toothed and incised. Flowers few, very small, on short peduncles. Sepals oblong. Petals always shorter than the sepals, and often scarcely half their length, pale yellow. Scale very conspicuous, cuneate, bidentate at the summit. Carpels much compressed; the beak very slender, about half the length of the carpel.

33. *R. Carolinianus* (DC.): stem erect, with a few slender branches, hairy, the hairs on the lower part somewhat spreading, above appressed; radical leaves cordate, 3-lobed or 3-parted; lobes ovate, subincised or crenately toothed; cauline ones 3-parted, with the lobes linear-lanceolate and nearly entire; sepals shorter than the oblong-obovate petals; carpels few, conspicuously margined, with the beak broad and nearly straight.—*DC. syst.* 1. *p.* 292. R. palmatus, *Ell. sk.* 2. *p.* 61. R. lanuginosus, *Pursh, fl.* 2. *p.* 294?

Pine-barren swamps, South Carolina, *Elliott.* West Florida, *Dr. Chapman!* April–May.—Stem 12–18 inches high, slender, the upper part producing several long 1-flowered branches. Leaves scarcely more than an inch in length and breath; lobes rhombic-ovate, obtusely toothed. Flowers about half an inch in diameter. Carpels 5–8, large, the margin almost winged.—A very distinct species, allied to R. occidentalis, *Nutt.;* but easily distinguished by the short nearly straight beaks of the carpels.

34. *R. tomentosus* (Poir.): stem ascending, very villous with spreading hairs, 1–2-flowered; leaves tomentose, petiolate, 3-cleft; the upper ones sessile, ovate, undivided; calyx very villous, somewhat reflexed. *DC.*—*Poir. dict.* 6. *p.* 127; *DC. syst.* 1. *p.* 292; *Ell. sk.* 2. *p.* 264; *Pursh, fl.* 2. *p.* 394.

In South Carolina, *Bosc.*—Root fibrous-fasciculate. Stem short, ascending at the summit, densely clothed with soft spreading hairs. Leaves 3-cleft; segments 3-lobed, ovate, dentate, with the pubescence appressed. Petals obovate, a little longer than the calyx. *DC.*—De Candolle remarks of this obscure species that it resembles R. pubescens and R. Marilandicus. He refers to it R. tomentosus of Pursh, whose specimen in Lambert's herbarium is too imperfect for comparison. He also refers R. lanuginosus of Pursh both to R. tomentosus and R. Carolinianus, noting it, in the latter instance, with the mark (!); but we did not observe any Purshian specimens of that species in Lambert's herbarium. Is R. tomentosus, *Poir.* a variety of R. repens?

35. *R. tenellus* (Nutt.! mss.): "leaves somewhat hairy on the upper side, the radical ones on long petioles, cordate, 3–5-cleft; the divisions 2–3-cleft, acute; those of the stem 3-parted or entire; stem slender and somewhat spreading, smooth; flowers minute; carpels much compressed, smooth, with a minute curved style.

"Shady woods of the Oregon and Wahlamet Rivers," *Nuttall!*—Stem 1½–2 feet high, nearly naked, almost filiform. Leaves an inch long.—Flowers as large as in R. sceleratus. Sepals hairy. Petals obovate, a little larger than the sepals. Peduncles much elongated in fruit. Carpels 6–8, suborbicular; the style slender and very short.

36. *R. fascicularis* (Muhl.): plant clothed with an appressed silky pubescence; stem short, erect or spreading; leaves pinnately divided; segments

oblong-obovate or cuneiform, pinnatifidly lobed; calyx spreading, villous, half the length of the petals; heads subglobose; carpels orbicular, tumid; style subulate, somewhat curved, nearly as long as the carpels.—*Muhl.! cat. p.* 56; *DC. prodr.* 1. *p.* 40; *Bigel. fl. Bost. ed.* 2. *p.* 226; *Hook. fl. Bor.-Am.* 1. *p.* 20. *t.* 8. *f.* 1; *Darlingt.! fl. Cest. p.* 329.

Rocky woods, &c. Canada! to Pennsylvania! and Wisconsin! April–May.—Root fascicled. Leaves variously divided, but the middle lobe always petioled. Petals obovate or oblong (5–6–7 *Hook.*). Flowers as large as in R. acris. Carpels glabrous, scarcely margined, minutely punctate, abruptly terminated by a slender curved or nearly straight style (in our specimens), or margined, the margin tapering upward into a recurved filiform style, which is flat and membranaceous at the base (*Hook.*).—We have not seen the carpels as they are described by Hooker;—nor is the style more than slightly curved as represented in his figure.

37. ***R. Schlechtendalii*** (Hook.): pilose with spreading hairs; stem somewhat branching, short; leaves on long petioles, reniform-cordate, 3-parted; lobes obovate, 3-cleft or laciniately divided; sepals pilose, spreading, at length reflexed, shorter than the petals; style as long as the ovary. *Hook. fl. Bor.-Am.* 1. *p.* 11. (R. fascicularis, *Schlecht. animad. bot.* 2. *p.* 30. *t.* 2. (fide *Hook.*)
(= fl ex Muhl.

Rocky Mountains, lat. 52°–55°.—A span high. Leaves somewhat hirsute, ciliate, all except the uppermost cordate or reniform. Petals obovate. Fruit not seen. *Hook.*

38. ***R. orthorhynchus*** (Hook.): hairy, with the hairs closely appressed; stem erect, slender, branching and nearly naked above; radical leaves petioled, 3-foliolate; leaflets linearly many-cleft, with white callous points; calyx reflexed; carpels semi-ovate, compressed, strongly margined, shorter than the nearly straight style. *Hook. fl. Bor.-Am.* 1. *p.* 21. *t.* 9.

Low lands near rivers, Oregon, *Douglas*, *Nuttall!*—Stem 1–2 feet high, sparsely hirsute. Leaves ternately pinnatifid, with the leaflets mostly pinnatifidly divided; segments linear or oblong. Flowers as large as in R. acris. Sepals oval, half the length of the obovate petals. Carpels few and large, glabrous.

39. ***R. bulbosus*** (Linn.): hairy; radical leaves petioled 3-foliolate and somewhat pinnately divided; leaflets 3-cleft, incisely toothed; stem erect, bulbous at the base; calyx reflexed, shorter than the sepals; carpels subovate, with a short acute recurved beak.—*DC. prodr.* 1. *p.* 41; *Michx! fl.* 1. *p.* 321; *Pursh, fl.* 2. *p.* 392; *Darlingt. fl. Cest. p.* 331.

Fields and pastures; introduced from Europe. May.—Stem about a foot high; hairs appressed. Leaves variously cut. Peduncles sulcate. Petals sometimes more than 5, deep yellow, and shining. Carpels in a globose head.—*Butter-cups.*

§ 3. *Carpels tuberculate or aculeate-hispid.*—Echinella, *DC.*

40. ***R. muricatus*** (Linn.): leaves petioled, glabrous, somewhat orbicular, mostly 3-lobed, the lobes coarsely toothed; stem sparingly pilose, erect or diffuse; calyx spreading, shorter than the petals; carpels tuberculate-aculeate, margined, terminated by a strong, ensiform, straight or somewhat hooked beak.—*Michx.! fl.* 1. *p.* 321; *Pursh, fl.* 2. *p.* 395; *Ell. sk.* 2. *p.* 64; *Lam. ill. t.* 498; *DC. prodr.* (*β. Carolinus*) 1. *p.* 42.

Virginia to Louisiana! May—July. Introduced?—Leaves sometimes undivided, sometimes cleft to the base; floral ones oblong or lanceolate, entire. Flowers small. Petals obovate, bright yellow.

41. *R. parviflorus* (Linn.): villous; leaves somewhat orbicular, 3-lobed or ternate; stem subdecumbent; calyx equalling the petals, at length reflexed; carpels roundish, granulated and hispid; style short, straight, or slightly hooked.—*DC. prodr.* 1. *p.* 42. R. trachyspermus, *Ell.! sk.* 2. *p.* 65.

β. leaves 3-lobed, with the lobes incisely and acutely toothed.

γ. leaves cleft to the base or ternate; leaflets cuneiform, 3-lobed.

Virginia, North Carolina! *β.* Georgia! *γ.* California, *Douglas!*—①! Stem 6–15 inches high, slender. Leaves less than an inch in diameter. Flowers small. Petals 3–4–5. Carpels with a thin acute margin; beak scarcely one third the length of the carpel.

‡ *Doubtful species.*

42. *R. Hornemanni* (Schlecht.): leaves ternate, hirsute; leaflets 3-lobed; calyx reflexed, pilose; peduncles sulcate. *DC. prodr.* 1. *p.* 44; *Schlecht. animad. bot.* 2. *p.* 36.—Allied to R. Philonotis. *DC.*

43. *R. Chilensis* (DC.): stem procumbent, and with the petioles hispid; leaves somewhat villous, roundish-cordate, 2–3-cleft; lobes coarsely dentate; calyx very villous. *DC. syst.* 1. *p.* 286; *Hook. & Arn. in bot. Beechey*, *p.* 4. *t.* 3.

California? *Hook. & Arn.* (l. c.) The plant may have been intro~~duced by~~ mistake among the Californian collections of Beechey's voyage.

44. *R. septentrionalis* (Poir.): smoothish; leaves membranaceous, glabrous, 3-foliolate; leaflets somewhat 3-lobed, incised, acute; stem and base of the petioles hirsute; peduncles about 2-flowered; calyx reflexed. *Poir. dict.* 6. *p.* 125; *Pursh*, *fl.* 2. *p.* 395.

De Candolle refers Poiret's plant to his R. Carolinianus; but it can hardly be that species.

R. Robini, Raf. *fl. Ludov.* = R. Flammula.

R. meganthus, Raf. l. c.

R. polypetalus, Raf. l. c.

R. leptopetalus, Raf. l. c.

R. obtusiusculus, Raf.; *DC. prodr.* 1. *p.* 43.

6. MYOSURUS. *Dill.; Linn.; DC. syst.* 1. *p.* 231.

Sepals 5, produced downward at the base beyond their insertion. Petals 5; the claw filiform and tubular. Stamens 5–20. Achenia triquetrous, very closely spicate on a much elongated torus. Seed suspended.—A minute annual, with linear entire radical leaves. Scapes 1-flowered; flower minute.

M. minimus (Linn.)—*DC. prodr.* 1. *p.* 25; *Ell. sk.* 1. *p.* 582. M. Shortii, *Raf.! in Sill. jour.* 1. *p.* 379; *DC. l. c.*

(Rocky borders of the Wahlamet, Oregon); and in alluvial situations in Arkansas, *Nuttall!* Georgia and Louisiana, *Dr. Leavenworth!* Kentucky, *Short!* April.—Leaves 1–2 inches long, less than a line in breadth. Scape 1–4 inches high. Flowers pale yellow. Spike of carpels terete, tapering, resembling the tail of a mouse:—hence its vulgar name–*Mouse-tail.*

7. CYRTORHYNCHA. *Nutt. mss.*

"Sepals 5, petaloid, narrow, spreading. Petals 5, narrow and unguiculate; the claw nearly the length of the lamina, with a projecting scaly callosity at its summit. Stamens rather numerous: anthers rounded. Stigmas short and subulate, strongly incurved. Achenia oblong-cylindrical, somewhat conspicuously grooved (not carinated), collected into a spheroidal head. Seed suspended.—A small perennial herbaceous plant. Leaves mostly arising from a short caudex, ternate and bipinnately divided. Panicle loose and cymose. Calyx petaloid and, like the corolla, bright yellow. In the fruit it resembles Thalictrum; in the flower, both Anemone and Ranunculus."

C. ranunculina (Nutt.! mss.)

"By the sides of gravelly brooks in the eastern range of the Rocky Mountains, around the place known by the name of Independence Rock on the banks of the Sweet Water of the Platte, but not further to the westward. Flowers in June.—Caudex clothed with numerous brown vestiges of sheathing petioles. The whole plant quite smooth. Leaves somewhat coriaceous and shining; radical ones on long petioles, the subdivisions pinnatifid; laciniæ entire or 2–3-toothed. Stem, or scape, about a span high, cymosely branched above; bearing at the lowest division a single sessile 3-parted leaf, and at the upper divisions minute and undivided leaves. Sepals oblong-ovate, spreading but not reflexed. Petals somewhat longer than the sepals, oblong, obtuse, very conspicuously narrowed below into a long claw, (almost like the nectaries of Coptis); the upper part of the claw thickened by a scale-like process. Stamens 20 or more: anthers adnate. Carpels 10–15, quite glabrous, cylindrical-oblong, grooved (as in Thalictrum). Stigma subulate, shorter than the ovary, inflexed so as to be almost concealed in the mature fruit."

TRIBE III. HELLEBOREÆ. *DC.*

Petals irregular, often bilabiate or tubular, nectariferous, sometimes wanting. Calyx petaloid. Anthers mostly extrorse. Carpels few (rarely solitary), follicular, with several seeds.

8. CALTHA. *Linn.; DC. syst.* 1. *p.* 306.

Sepals 6–9, petaloid. Petals none. Stamens numerous. Ovaries 5–10. Follicles 5–10, compressed, spreading, many-seeded.—Perennial very glabrous herbs. Leaves cordate or reniform (rarely sagittate).—The North American species belong to § 2. *Populago, DC.*

1. ***C. palustris*** (Linn.): stem erect; leaves suborbicular, cordate or reniform, obtusely crenate or nearly entire; the lobes rounded; sepals 5–6, broadly oval.—*DC. prodr.* 1. *p.* 44; *Michx. fl.* 1. *p.* 324; *Pursh, fl.* 2. *p.* 390; *Darlingt. fl. Cest. p.* 336.

β. integerrima: leaves wholly entire; floral ones sessile, obscurely crenate; petals obovate.—C. integerrima, *Pursh! fl.* 2. *p.* 390; *DC. prodr.* 1. *p.* 45.

γ. parnassifolia: stem 1-flowered, 1-leaved; leaves all petioled, broadly-reniform, sharply toothed; sepals elliptical.—C. parnassifolia, *Raf. in med.*

rep. 2. *p.* 361; *Nutt. gen.* 2. *p.* 22. *DC. prodr.* 1. *p.* 45. C. ficarioides, *Pursh, fl.* 2. *p.* 309. C. palustris β. *DC. l. c?* Ranunculus Ficaria, *Walt. Car. p.* 159?

δ. *flabellifolia:* stem procumbent; leaves all petioled, broadly reniform, the lobes widely spreading.—C. dentata, *Muhl cat.* C. flabellifolia, *Pursh! fl.* 2. *p.* 390. *t.* 17.

Swamps, Canada! to South Carolina, and west to the Pacific! April–May.—Stem mostly erect, rather thick and succulent (in δ. more slender), 6–10 inches high, corymbosely or dichotomously branched above (except in γ.). Radical leaves 2–4 inches broad, on petioles 3–8 inches or more in length, crenately or acutely dentate, or quite entire. Flowers few, 1–1½ inch in diameter (in δ. smaller), pedunculate, bright yellow. Carpels oblong, somewhat recurved, mucronate with the style; the point at first inflexed, but at length nearly straight.

2. *C. asarifolia* (DC.): stem nearly erect, 1-flowered; leaves reniform-cordate with the sinus obtuse, crenate; sepals 6–7, oval. *DC.! syst.* 1. *p.* 309. (v. s. in herb. *Lamb.*)

Unalaschka and the Aleutian Isles.—Stem weak, longer than the leaves. Leaves 12–15 lines long, 2 inches broad; those of the stem nearly sessile. Sepals yellow, like those of C. palustris, but smaller. *DC.*—Scarcely more than a variety of C. palustris, and apparently identical with the var. minor of De Candolle.

3. *C. natans* (Pallas): stem procumbent, floating; leaves reniform-cordate, crenate, with the lobes somewhat approximated, obscurely crenate towards the base, toothed towards the summit; sepals oval; carpels with a straight beak. *DC. prodr.* 1. *p.* 45; *Hook. fl. Bor.-Am.* 1. *p.* 22.

Creeping on the surface of deep sphagnous swamps, in the woody central districts of British America, from Canada to lat. 60°; rare. *Dr. Richardson.*—Flowers white, not half as large as in C. palustris. *Hook.* Capsules in a dense head; anthers oval. *R. Br.*

4. *C. arctica* (R. Brown): stem creeping; leaves reniform, repandly crenate, obtuse; carpels (12–16) imbricated; stigma persistent, with the apex rounded; stamens 20 or more, with the anthers linear. *R. Br. in Parry's 1st voy. app. p.* 265; *Hook. fl. Bor.-Am.* 1. *p.* 22.

Melville Island, and coast of the Arctic Sea.—Flowers yellow. Near C. radicans, and by its creeping stem allied to C. natans. The latter has smaller leaves, white flowers and oval anthers.—*R. Br.*

5. *C. leptosepala* (DC.): stem 1-leaved or naked, mostly 1-flowered; radical leaves on long petioles, ovate-cordate, obscurely crenate; sepals 8–10, oblong; pistils 8–15.—*DC.! syst.* 1. *p.* 310, (v. s. in herb. *Lamb.*); *Hook. fl. Bor.-Am.* 1. *p.* 22. *t.* 10. C. sagittata, *Torr.! in ann. lyc. New-York,* 2. *p.* 164. (excl. syn.)

North West America, and Rocky Mountains, south to lat. 40°!—A span high. Scape? 1-(rarely 2-) flowered, smaller than in C. palustris. Sepals white. Carpels 8–10, oblong. Styles none, or very short; stigma obtuse, recurved.

6. *C. biflora* (DC.): stem with a single leaf, 2-flowered; radical leaves petioled, reniform, crenate, with a very broad sinus; sepals oblong. *DC. syst.* 1. *p.* 310; *Hook. fl. Bor.-Am.* 1. *p.* 22.

North West America.—Sepals rather acute, broader and shorter than in the preceding species. Carpels 3–16, acuminate with the style. *DC.*—Perhaps, as Hooker intimates, not distinct from C. leptosepala.

9. TROLLIUS. *Linn.; DC. syst.* 1. *p.* 311.

Sepals 5–10–15, deciduous, petaloid. Petals 5–20, small, 1-lipped, tubu-

lar at the base. Stamens and ovaries numerous. Follicles numerous, sessile, somewhat cylindrical, many-seeded.—Perennial glabrous herbs; with fibrous-fasciculate roots, and palmately divided leaves; the segments many-cleft.

1. *T. laxus* (Salisb.): sepals 5–6, spreading; petals 15–25, shorter than the stamens.—*Salisb. in Linn. trans.* 8. *p.* 303; *Pursh, fl.* 2. *p.* 391; *Gray! in Ann. lyc. New-York,* 3. *p.* 222. T. Americanus, *Muhl.! cat. p.* 56; *DC. prodr.* 1. *p.* 46; *Hook. fl. Bor.-Am.* 1. *p.* 23.
Sphagnous swamps, Canada to Pennsylvania! Delaware! Eastern declivity of the Rocky Mountains, lat. 52° and 55°, *Drummond.* May.—Plant 1–2 feet high, erect. Flowers twice as large as in Ranunculus acris. Sepals ochroleucous with a tinge of green beneath. Petals minute, much shorter than the stamens, deep orange-yellow. Carpels 8–15.

10. COPTIS. *Salisb. in Linn. trans.* 8. *p.* 305.

Sepals 5–6, petaloid, deciduous. Petals 5–6. Stamens 15–25. Follicles 5–10; on long stipes, somewhat stellately diverging, membranaceous, ovate-oblong, pointed with the style, 4–8-seeded.—Herbs with radical, divided, subcoriaceous leaves, and very slender extensively creeping roots.

§ 1. *Petals very small, cucullate-obconic.*—CHRYZA, Raf.

1. *C. trifolia* (Salisb.): leaves 3-foliolate; leaflets cuneiform-obovate, crenately and mucronately toothed, obscurely 3-lobed; scape 1-flowered.—*Salisb. l. c.; Pursh, fl.* 2. *p.* 390; *DC. prodr.* 1. *p.* 47; *Hook.! fl. Bor.-Am.* 1. *p.* 23; *Bigel. med. bot.* 1. *t.* 5. Helleborus trifolius, *Linn.; Michx. fl.* 1. *p.* 325. Chrysa borealis, *Raf. in Desv. jour. bot.* 2. *p.* 170.
Bogs, Greenland, and Labrador! to Pennsylvania! North West America! Sitcha! Unalaschka! May-June.—Roots consisting of long bright-yellow fibres, intensely bitter. Leaves evergreen; leaflets about an inch long. Scape slender, 3–5 inches high. Sepals 5–7, oblong, obtuse, white. Petals much shorter than the sepals, yellow at the base. Carpels acuminated with the persistent style. Seeds oblong, black and shining; raphe very indistinct.

§ 2. *Petals and sepals linear, consimilar.*—CHRYSOCOPTIS, Nutt.

2. *C. occidentalis:* leaves 3-foliolate; leaflets petiolulate, broadly ovate, subcordate, 3-lobed, incisely toothed; scape short, 3-flowered.—Chrysocoptis occidentalis, *Nutt.! in jour. acad. Philad.* 7. *p.* 9. *t.* 1.
Rocky Mountains, *Mr. Wyeth!*—Roots long and slender, bright yellow, arising from a short thick rhizoma. Leaves sempervirent, dark green, about an inch and a half long, and nearly of the same breadth. Flowers on very short pedicels. Petals about 6, with claws, similar to the sepals and of equal length, not hooded. Ovaries 8–10. Fruit not seen. *Nutt.*—Habit and leaves of C. trifolia: flowers near C. asplenifolia. The scape probably lengthens in maturity.

§ 3. *Petals and sepals somewhat similar: petals dilated and cucullate in the middle, longer than the sepals.*—PTEROPHYLLUM, Nutt.

3. *C. asplenifolia* (Salisb.): leaves biternate; leaflets somewhat pinna-

tifid, acutely serrate; scape 2-flowered; sepals 5, linear-lanceolate, reflexed. *Salisb. l. c.; Pursh, fl.* 2. *p.* 391; *Hook. fl. Bor.-Am.* 1. *p.* 23. *t.* 11.

North West America! Sitcha!—Rhizoma thick, horizontal, branching, throwing off long blackish fibres. Scape at first shorter than the leaves, in fruit elongated; pedicels very long. Flowers white. Petals 5, very long and narrow, dilated and concave-cucullate in the middle, filiformly attenuated upwards. Carpels with a very short point at the summit.

11. ENEMION. *Raf. in jour. phys.* (1820) 2. *p.* 70.

Sepals 5, petaloid, deciduous. Petals none. Stamens 20–30. Ovaries 3–6 (mostly 4), 2-ovuled: style as long as the ovary: stigma glandular, recurved. Follicles 2–6, sessile, ovate, compressed, acuminate with the style, 2-seeded. Seeds large, ovate, compressed, with a prominent cord-like raphe: albumen oily.—A slender smooth herbaceous perennial. Leaves biternately divided, with lobed membranaceous segments. Flowers white. Roots fibrous and grumous.

E. biternatum (Raf.! l. c.)—*DC. prodr.* 1. *p.* 48. Isopyrum thalictroides, *Short! cat. pl. Kentucky*, 1. *p.* 8; *Hook! in jour. bot. p.* 187. (note.)

Moist shady places, Kentucky, *Dr. Short! Dr. Peter!* Indiana, *Dr. Clapp!* Arkansas, *Dr. Pitcher!* Ohio, *Riddell.* May.—Root consisting of a tuft of thick fibres, often grumous. Stems several, 6–10 inches high, moderately branched. Radical leaves, and those on the lower part of the stem, on long petioles, biternate: leaflets roundish, 3-lobed; the lobes very obtuse. Petioles auricled at the base. Flowers on filiform peduncles which are at length much elongated, terminal, and axillary near the upper part of the stem, about three-fourths of an inch in diameter. Sepals obovate, obtuse, white. Petals always wanting. Stamens half as long as the sepals: filaments filiform: anthers ovate. Ovaries seldom less than 3, or more than 5, ovate. Style somewhat clavate; nearly the upper half stigmatic on the inner side. Carpels broadly ovate, marked with a few strong oblique veins, spreading in a radiated manner and at length reflexed, acuminated with the persistent style. Seeds nearly a line and a half in length, minutely pubescent. Embryo very minute.—This plant so greatly resembles Isopyrum thalictroides, that without the fruit, it can only be distinguished by a close examination.

12. AQUILEGIA. *Linn.; DC. syst.* 1. *p.* 333.

Sepals 5, deciduous, colored. Petals 5, somewhat bilabiate; the outer lip large, flat and spreading; inner one very small, produced at the base into as many hollow spurs or horns, which descend between the sepals. Follicles 5, erect, many-seeded, pointed with the style.—Perennial herbs with bi- or triternate leaves. Flowers terminal, scattered. *Columbine.*

1. *A. Canadensis* (Linn.): spur straight, longer than the limb; sepals ovate or oblong, a little longer than the petals; stamens and styles exserted. —*Michx.! fl.* 1. *p.* 316; *DC. prodr.* 1. *p.* 50; *Bot. mag. t.* 246; *Hook.! fl. Bor.-Am.* 1. *p.* 24 (in part); *Bart. fl. Am. Sept.* 1. *t.* 36.

β. hybrida (Hook.): spurs incurved at the apex; styles shorter; flowers purplish.—*Hook. l. c.*—"A. Canadensis *β.* violacea; spurs nearly twice the length of the petals." *Nutt.! mss.*

On rocks, Hudson's Bay to Georgia; west to Missouri! *β.* Big Blue River of the Platte, *Nuttall!* Rocky Mountains, *Drummond.* May–July.—Root fusiform. Stem 12–18 inches high, and with the leaves, glabrous. Leaves commonly biternate; leaflets cuneiform, crenately lobed. Flowers pendulous, scarlet externally, yellow inside. Spurs about an inch long, swollen and callous at the extremity. Ovaries pubescent.

2. *A. formosa* (Fischer): spur straight, much longer than the limb; sepals lanceolate, acute, three times the length of the petals; styles as long as the sepals.—*Fisch. in DC. prodr.* 1. *p.* 50. A. Canadensis, *Bong.! veg. Sitcha, in mem. acad. St. Petersb.* (6 *ser.*) 2. *p.* 124; *Hook.! fl. Bor.-Am.* 1. *p.* 30. (in part.)

Oregon, *Nuttall! Dr. Scouler!* Sitcha and Unalaschka, *Bongard!*—This species much resembles A. Canadensis; but differs in the comparative nakedness of the stem, the upper part of which is clothed with a few small leaves. The flowers are larger, pubescent and brighter colored, and the sepals are nearly as long as the spurs.

3. *A. cærulea* (Torr.): spurs straight, very slender, about twice as long as the limb; sepals rhomboid-ovate, acute, longer than the petals; stamens and style shorter than the corolla.—*Torr.! in ann. lyc. New-York*, 2. *p.* 164. A. leptocera, *Nutt.! in journ. acad. Philad.* 7. *p.* 9.

Rocky Mountains, lat. 40°, *Dr. James! Mr. Wyeth!* June.—Stem about a foot high, slender, glabrous. Leaves mostly radical, glaucous beneath; leaflets deeply cleft. Flowers somewhat solitary, large, bright blue (ochroleucous, *Nutt.*). Sepals narrow at the base. Petals very obtuse.

Bot. Mag. T. 4407 - with good remarks by Hooker.

4. *A. brevistyla* (Hook.): somewhat pubescent; spurs incurved, shorter than the limb; styles short, included; petals a little exceeding the stamens.—*Hook. fl. Bor.-Am.* 1. *p.* 21. A. vulgaris? *Richards. app. Frankl. jour. ed.* 2. *p.* 21.

Western parts of Canada, as far north as Bear Lake, *Dr. Richardson.*—Stem and leaves as in A. vulgaris, but the flowers (which are blue) only half the size. Sepals ovate-lanceolate. Carpels one inch long, pointed with a short style.—Near A. vulgaris and A. cærulea. *Hook.*

13. DELPHINIUM. *Linn.; DC. syst.* 1. *p.* 340.

Sepals 5, deciduous, petaloid, irregular; the upper one produced into a spur at the base. Petals 4, irregular; the 2 superior ones furnished with a spur-shaped appendage at the base, inclosed in the spur of the calyx. Ovaries 1–5, mostly 3. Follicles many-seeded.—Annual or perennial herbs with erect branched stems. Leaves petiolate, palmately divided. Flowers in terminal racemes, commonly blue.—*Larkspur.*

§ 1. *Ovary solitary: petals united into one: inner spur of one piece: annual.*—Consolida, *DC.*

1. *D. Consolida* (Linn.): stem erect, somewhat glabrous, divaricately branched; flowers few, in a loose raceme; pedicels longer than the bracts; carpels smooth. *DC. prodr.* 1. *p.* 51; *Pursh! fl.* 2. *p.* 372.

"Near Staunton, and on dry hills near the South Mountain [Virginia] native." *Pursh*, in herb. *Barton!*—In fields, and along road-sides; introduced from Europe, and almost naturalized. July.

§ 2. *Ovaries* 3–5 *: petals not cohering, the inferior ones 2-cleft: spur elongated: perennial.*—Delphinastrum, *DC.*

2. *D. exaltatum* (Ait.): petioles not dilated at the base; leaves deeply 3–5-cleft; lobes cuneiform, divaricate, 3-cleft, acuminate; raceme strict; spur straight, as long as the calyx; lower petals deeply 2-cleft, sparingly bearded; with a minute spur-like process at the base of the claw.—*Ait. Kew.* (*ed.* 1.) 2. *p.* 244; *DC. prodr.* 1. *p.* 54; *Pursh, fl.* 2. *p.* 371; *Ell. sk.* 2. *p.* 18; *Hook. fl. Bor.-Am.* 1. *p.* 25. D. tridactylum, *Michx.! fl.* 1. *p.* 314. D. urceolatum, *Jacq. ic. rar.* 1. *t.* 91. (fide *Hook.*) D. alpinum, *Waldst. and Kit.* 3. *t.* 246. (fide *Hook.*)

Canada to South Carolina! Kentucky, *Short!* Ohio, *Riddell.* June–Aug.—Stem 2–4 feet high, glabrous below, pubescent towards the summit. Lower leaves 4–5 inches in diameter, about 5-cleft; upper ones somewhat 3-parted, with the divisions incised and widely spreading; lateral ones 2-lobed. Racemes, and outer surface of the sepals, canescent. Flowers bright blue (sometimes white, *Drummond*). Sepals with a pubescent, yellowish, longitudinal line externally. Limb of the upper petals entire. Carpels 3, straight.

3. *D. Californicum:* petioles dilated at the base; leaves palmately 3–5-cleft; divisions incisely 3-lobed; raceme strict, and with the flowers, pubescent; spur as long as the calyx, somewhat incurved; limb of the superior petals notched; lower ones 2-cleft, densely bearded on the inside; the claw furnished with a minute spur-like process at the base.

California, *Douglas!*—Stem smooth below. Lower leaves deeply 5-cleft; the divisions cuneiform, 3-lobed; segments of the upper leaves lanceolate, divaricately lobed. Flowers as large as in D. exaltatum, pale blue? Ovaries 3. Petals as long as the sepals.

4. *D. tricorne* (Michx.): petioles slightly dilated at the base; leaves 5-parted, with the divisions 3–5-cleft; lobes linear, acutish; petals shorter than the sepals, the lower ones 2-cleft and bearded within; spur straight, as long as the calyx, ascending.—*Michx.! fl.* 1. *p.* 314; *Pursh! fl.* 2. *p.* 371; *DC. prodr.* 1. *p.* 54; *Deless. ic.* 1. *t.* 59; *Ell. sk.* 2. *p.* 18.

Hills and woods, Pennsylvania! Virginia! Louisiana and western States! to Arkansas! April–May.—Sparingly pubescent. Stem 6–18 inches high. Root tuberous. Leaves with an orbicular circumscription. Raceme somewhat loose, 6–12-flowered. Flowers bright blue, sometimes white, pubescent. Lower petals densely bearded; claw slightly gibbous at the base. Carpels 3, ovate, spreading, reticulately veined.

5. *D. Menziesii* (DC.): petioles slightly dilated at the base; leaves 3-parted; lobes 3-cleft, linear, entire; bracts 3-cleft; raceme strict; petals bearded; spur straight, longer than the limb; root grumous. *DC. syst.* 1. *p.* 355; *Hook. fl. Bor.-Am.* 1. *p.* 25; *Bot. reg. t.* 1192. D. simplex, *Hook. l. c.*

β. ochroleuca (Nutt.! mss.): "flowers pale yellow, the tips of the sepals only blue."

Western coast of America! from California to Kotzebue's Sound, and on the plains of the Oregon! down to the sea, (never in the shade of the forest, *Nutt.*) *β.* Open prairies and along the banks of the Wahlamet, *Nuttall!*—Root grumous and tuberous. Stem from a span to two or more feet high, nearly simple but sometimes paniculately branched, and as well as the leaves, pubescent. Raceme elongated; rachis and pedicels velvety-pubescent. Flowers (except in *β.*) deep blue, marked externally with a hairy line. —Near D. azureum.

6. *D. azureum* (Michx.): petioles slightly dilated at the base; leaves 3–5-parted, many-cleft, with linear lobes; racemes strict; petals shorter than the sepals; the lower ones deeply 2-cleft, densely bearded; claw hispid on one side, the other side with a spur-like process at its base; spur ascending.

α. leaves (and lower part of the stem) nearly glabrous; lower petals with a yellowish pubescent line externally; spur somewhat incurved, longer than the sepals; lobes of the lower petals somewhat obtuse; flowers azure.—D. azureum, *Michx.! fl.* 1. *p.* 314; *Pursh, fl.* 2. *p.* 371; *DC. prodr.* 1. *p.* 54; *Deless. ic.* 1. *t.* 60; *Ell. sk.* 2. *p.* 18. D. Carolinianum, *Walt. Car. p.* 135.

β. canescently pubescent; divisions of the leaves many-cleft; segments all linear-subulate; flowers smaller, azure; spur incurved.—D. azureum, *Nutt. gen.* 2. *p.* 14.

γ. puberulent; segments of the upper leaves subulate; flowers very pale blue; spur straight, about as long as the sepals; lobes of the lower petals narrow, acute, somewhat divaricate.

δ. stem densely velutinous; leaves minutely pubescent, with narrowly linear or subulate segments; flowers pale blue; sepals with a brown pubescent spot; spur slightly curved; lobes of the lower petals oblong, acutish.

ε. minutely puberulent; stem velutinous above; leaves 3-parted, many-cleft; segments divaricate, very acute; flowers large, greenish-white; sepals with a brownish spot; spur thick, somewhat curved.

Var *α*. North Carolina to Georgia! Texas, *Drummond!* *β*. Arkansas, *Nuttall!* *γ* and *δ*. Arkansas, *Dr. Pitcher!* *β*. Lake Winnipeg, *Dr. Houghton!*

7. *D. vimineum* (Don): petioles scarcely dilated at the base; leaves flat, 3-parted; segments cuneiform, obtuse, 3-lobed, mucronulate, uppermost ones linear, undivided or 3-parted; racemes loose, velvety; limb of the inferior petals bifid at the summit; spur straight, as long as the sepals; ovaries silky. *Don in Sweet's Brit. fl. gard. t.* 374; *Hook.! in bot. mag. t.* 3593.

Velasco, Texas, *Drummond!* July–Aug.—Stem 1–3 feet high, slightly branched, slender. Leaves all petiolate; the segments narrow. Flowers middle sized, bright azure. Sepals oblong, rather obtuse, with a callous protuberance near the middle. "Upper petals resembling the carina of a papilionaceous flower. Lower petals with the limb spreading, purple, trifid, bearded with a tuft of yellow hairs." *Hook.*—In our specimens of what we consider to be this species, the lower petals are not bearded. The plant seems to be nearly allied to D. azureum.

8. *D. virescens* (Nutt.): pubescent; petioles scarcely dilated at the base; leaves 3–5-parted, the middle division mostly undivided, lateral ones 2–3-cleft; lobes lanceolate; raceme loose, few-flowered; sepals oblong or lanceolate; spur longer than the sepals, ascending; lower petals deeply 2-cleft; claw gibbous at the base.—*Nutt.! gen.* 2. *p.* 14; *DC. prodr.* 1. *p.* 53.

Plains of Missouri and Arkansas, *Nuttall!* North Carolina, *Schweinitz!* Georgia, *Le Conte!* June.—Stem 8–12 inches high. Raceme simple. Pedicels longer than the flowers. Bracts subulate. Flowers large, yellowish or greenish white, minutely pubescent. Sepals marked with a brownish spot near the apex, much longer than the petals. Spur straight or somewhat incurved. Lower petals rather densely bearded. Ovaries 3.

9. *D. variegatum*: pubescent; petioles dilated at the base; leaves 3-parted; divisions cuneiform, many-cleft, with the lobes linear and rather obtuse; raceme few-flowered; spur scarcely as long as the sepals; lower petals orbicular-ovate, 3-lobed, with the middle lobe small, sparingly bearded.

California, *Douglas!*—Stem 1–2 feet high, sulcate. Raceme strict, nearly simple. Lower bract 3-cleft. Sepals deep violet-blue, somewhat pubescent externally, obovate-oblong, obtuse, longer than the thick straight spur. Upper petals yellow (often tipped with blue), emarginate: lower ones sparingly bearded on the inner surface and margins, waved, unequally 3-lobed, the central lobe small and blue; one of the lateral lobes blue, the other yellow; claw with a small spur-like process at the base.

10. *D. bicolor* (Nutt.): pubescent; petioles somewhat dilated at the base; leaves digitately 5-parted; lobes 3–5-cleft; divisions linear, short, rather acute; raceme lax, few-flowered, the pedicels elongated and spreading; spur rather slender, as long as the sepals; lower petals broadly obovate, entire, sparingly bearded.—*Nutt.! in jour. acad. Philad.* 7. *p.* 10.

Dry hills near Flat-Head River, towards the southern sources of the Oregon, *Mr. Wyeth!* and in open plains on the sources of the Platte, *Nuttall!* April. —Stem about a span high. Leaves about 3, near the base of the stem, the circumscription reniform; divisions short and radiating, slightly pubescent. Lower bracteal leaves deeply 3–5-parted, with nearly undivided segments. Sepals large, deep violet-blue, oblong-ovate. Upper petals yellow veined with blue. Spur curved a little downward; claw of the lower petals without a spur at the base. Carpels 3.

11. *D. pauciflorum* (Nutt.! mss.): "somewhat hirsutely pilose; petioles scarcely dilated; leaves reniform, lobes bifid or trifid, linear and entire; bracts simple, minute; raceme 3–5-flowered; spur subulate, straight, about the length of the oblong acutish petals; stigmas and styles smooth; root grumous.

"Rocky Mountains and Blue Mountains of the Oregon.—Scarcely a foot high, slender; the lower part and the stem more or less minutely and roughly pubescent. Leaves nearly smooth on the upper surface; two or three divided ones on the stem, the uppermost beneath the flowers simple. Flowers 2–3, large, blue. Lower petals with a central line of pubescence; upper ones hirsute externally. Carpels pubescent." *Nutt.*

12. *D. depauperatum* (Nutt.! mss.): "lower part of the stem (and leaves) glabrous; upper part and the carpels densely villous; petioles scarcely dilated; leaves reniform, 5-parted; the lobes 2–3-cleft, oblong and rather broad; bracts simple, minute; raceme 1–5-flowered; spur subulate, straight, longer than the oblong obtuse petals; stigmas and styles pubescent; root grumous.

"In the shade of pine woods in the Blue Mountains of the Oregon.—Stem very slender, simple, about 2-leaved. Leaves scarcely an inch in diameter, the lower one glabrous, with broad simple segments; upper ones smaller, with narrow linear segments. Upper part of the stem and carpels minutely villous. Petals shorter than the spur; lower ones hairy. Flower often solitary, deep blue; upper petals yellowish." *Nutt.*

13. *D. nudicaule:* leaves all radical, on short petioles, 3-parted; lobes obovate-cuneiform, the lateral ones 2-lobed, terminal one somewhat 3-lobed; scape racemose, loosely flowered; pedicels elongated; spur straight, longer than the broadly ovate sepals; upper petals a little exceeding the calyx, lower ones 2-cleft, with a minute spur-like process at the base.

California, *Douglas!*—Scape 12–18 inches high, glabrous, 10–12-flowered. Pedicels elongated, spreading, 2–4 inches long, above the bracteoles pubescent. Bracts subulate, very small. Bracteoles minute, seated above the middle of the pedicels. Flowers (in dried specimens) purplish-red. Sepals obtuse or mucronate. Lower petals smooth on both sides; margin sparsely fringed; upper ones emarginate. Spur thick. Carpels 3, recurved-spreading, reticulately veined, pubescent.

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† *D elegans* (DC. syst. 1. p. 355.) was described from specimens transmitted by Delile from Elgin Botanic Garden, New-York. It is known to be an introduced plant, and is therefore left out of our Flora.

14. ACONITUM. *Linn.; DC. syst.* 1. *p.* 364.

Sepals petaloid, irregular, deciduous; the upper one (galea) large, vaulted. Petals 5; the 3 lower ones minute, often converted into stamens; the 2 upper on long claws, expanded into a sac or short spur at the summit, concealed under the galea. Follicles 3–5, many-seeded.—Perennial herbs. Leaves palmately divided.

1. *A. uncinatum* (Linn.): panicle rather loosely flowered, with diverging branches; galea obtusely conic, compressed, with an obtuse beak; spur thick, inclined; leaves deeply 3-lobed.—*Michx. ! fl.* 1. *p.* 315; *Bot. mag. t.* 1119; *DC. prodr.* 1. *p.* 60; *Ell. sk.* 2. *p.* 20.

Mountains, in wet places, New-York (Chenango county, *Le Conte!*) & Pennsylvania! to Georgia! June–July.—Root tuberous. Stem flexuous, slender (climbing, *Ell.*). Leaves truncate at the base, coarsely toothed; lateral segments often 2-lobed. Flowers blue, as large as in A. Napellus. Ovaries 3–5, villous.

2. *A. Napellus* (Linn.)—*β. delphinifolium* (Seringe): flowers racemose, with the peduncles elongated; galea semicircular; sac somewhat conic, with a short inclined spur; ovaries 4–6; lobes of the leaves pinnatifid; lobules undivided. *Seringe, mus. Helv.* 1. *p.* 159; *DC. prodr.* 1. *p.* 63; *Bong. ! veg. Sitcha, l. c. p.* 124. A. delphinifolium, var. Americanum, *DC. syst.* 1. *p.* 380; *Reichenb. aconit. t.* 9.

North West America, Sitcha! and north to Kotzebue's Sound; Rocky Mountains.—Flowers deep blue.

3. *A. nasutum* (Fisch. mss.): petals erect, with the spur arcuate; galea conical, prone; spur descending; raceme somewhat panicled; divisions of the leaves rather broad. *Hook. fl. Bor.-Am.* 1. *p.* 26. A. Fischeri, *Reichenb. aconit. t.* 22. (fide *Hook.*)

Near the source of the Wallawallah River, in the Blue Mountains of Oregon, *Douglas.*—A native also of Kamtscatka, Siberia, and the south of Europe.

4. *A. Columbianum* (Nutt.! mss.): "petals erect, with the spur arcuate; galea narrow and oblong; beak small and acutely projecting; stem attenuated; panicle small and racemose; leaves palmate, 5–7-cleft; segments rhombic-ovate, acute, incisely and sharply toothed; petioles very short.

"Springy places on the Oregon, below Wallawallah.—Plant glabrous except towards the summit, about 3 feet high, attenuated and leafy. Flowers small, pale dull blue, hairy. Galea narrower than the other sepals, with a prominent acute beak. Lateral sepals very unequal." *Nutt.*—This may be, as Mr. Nuttall suspects, not distinct from the preceding species.

‡ *Doubtful species.*

A. pallidum (Nutt.)—*Loudon's hort. Brit. suppl. p.* 482.

TRIBE IV. CIMICIFUGEÆ.

Subord. Cimicifugeæ, *Arn.*

Sepals petaloid, caducous. Petals (or rather dilated sterile filaments, or staminodia) 3–6. Anthers introrse or innate. Carpels few, some-

times solitary, rarely numerous, follicular or baccate, with several seeds, sometimes indehiscent and 1-seeded.—Flowers occasionally by abortion unisexual.

15. ACTÆA. *Linn.; Juss. gen. p.* 235; *Fischer & Meyer, ind. sem. St. Petersb.* 1835.

Sepals 4–5. Petals (or staminodia) 4–8, spatulate. Stamens numerous: anthers introrse. Stigma capitate, sessile. Carpels solitary, baccate, many-seeded. Seeds compressed, smooth, horizontal.—Perennial herbs. Leaves 2-3-ternately divided; segments incisely serrate. Flowers in simple racemes, white.

1. *A. rubra* (Bigel.): raceme ovate; pedicels longer than the flower, scarcely any thicker in fruit; petals rhombic-ovate, acute, shorter than the stamens; fruit subovate (red).—*Bigel.! fl. Bost. ed.* 2. *p.* 211; *Hook. fl. Bor.-Am.* 1. *p.* 27; *Fisch. & Mey. l. c. p.* 20. A. Americana α. rubra, *Pursh, fl.* 2. *p.* 366. A. brachypetala β. rubra, *DC. prodr.* 1. *p.* 65. A. spicata α. rubra, *Michx.! fl.* 1. *p.* 308.

Rocky woods, Hudson's Bay to Pennsylvania! west to the Rocky Mountains. May.—Stem about two feet high, "leafless and scaly at the base," *Fisch. & Mey.* Leaves ternately decompound; leaflets ovate, acuminate, 1–2 inches long, unequally and incisely serrate; the terminal one often 3-cleft. Raceme 20–40-flowered, broadly ovate or hemispherical. Sepals 4, greenish, ovate. Petals sometimes 8 or 10, minute. Berries bright cherry-red, shining, about 16-seeded, on pedicels half an inch in length, and not one-fourth as thick as the peduncle.

2. *A. alba* (Bigel.): raceme oblong; pedicels as long as the flower, much thickened in fruit; petals oblong, truncate at the apex, shorter than the stamens; fruit roundish-ovate (white).—*Bigel. l. c.; Hook. l. c.; Fisch. & Mey. l. c.* A. Americana β. alba, *Pursh, fl.* 2. *p.* 336. A spicata β. alba, *Michx. l. c.* A. brachypetala α & δ. *DC. prodr.* 1. *p.* 65. A. pachypoda, *Ell. sk.* 2. *p.* 15.

Rocky woods, Canada! to Georgia, west to the Mississippi. May.—Resembles the preceding very much in its foliage and inflorescence. "Stem leafy at the base," *Fisch. & Meyer.* Petals often 2-toothed at the apex. Pedicels of the flowers nearly as thick as the peduncle, at length ½–1 inch long, spreading, red. Berry one-fourth of an inch in diameter, 8–12-seeded, milk-white and often tipped with purple.—Very near A. spicata of Europe.

3. *A. arguta* (Nutt.! mss.): "raceme oblong, sometimes divided towards the base, loose; pedicels longer than the flowers, filiform, scarcely thickened in fruit; petals oblong, obtuse, shorter than the stamens; fruit subglobose, (red); leaflets doubly and incisely serrate.

"Woods of the Oregon and its tributary streams.—A much larger plant than A. rubra, with smaller dark red berries, and more deeply serrated leaflets. Lower pedicels 1¼ inch in length." *Nutt.*

16. CIMICIFUGA. *Linn. amœn.* 7. *p.* 435; *Juss. gen. p.* 234.

Cimicifuga, Actinospora, & Botrophis, *Fisch. & Meyer.*

Sepals 4–5. Petals (or rather staminodia) 3–5, concave or unguiculate, sometimes by abortion fewer or none. Stamens numerous: anthers introrse. Style short: stigma simple. Carpels 1–8, follicular, many-seeded.—Perennial herbs. Leaves 2–3-ternately divided; segments incisely serrate. Flowers in virgate racemes, white.

§ 1. *Monogynous: carpels subglobose: seeds compressed, smooth, horizontal: staminodia several, very small, with long claws.*—Macrotys, Raf. (Botrophis, *Raf.; Fisch. & Meyer.*)

1. *C. racemosa* (Ell.): racemes very long; leaflets ovate-oblong, incisely toothed; staminodia slender, 2-forked.—*Ell. sk.* 2. *p.* 16. C. serpentaria, *Pursh, fl.* 2. *p.* 372. Actæa racemosa, *Linn.; Michx.! fl.* 1. *p.* 308; *DC. prodr.* 1. *p.* 64; *Hook. fl. Bor.-Am.* 1. *p.* 27. A. monogyna, *Walt. Car. p.* 151. Macrotys actæoides, *Raf. in Desv. jour. bot.* 2. *p.* 170. Botrophis serpentaria, *Raf. med. fl.* 1. *p.* 85. B. actæoides, *Fisch. & Meyer, l. c.*

Woods, Canada! to Georgia! and Western States. July.—Root thick and knotted, with long fibres. Stem 3–8 feet high, glabrous, furrowed, leafy near the middle. Leaves 3-ternate: leaflets 2–3 inches long. Racemes branching, 6–12 inches long: pedicels 3–4 lines in length, bracteate. Flowers very fetid. Sepals caducous, greenish-white, concave. Staminodia 4–8! Carpels globose-ovate, glabrous. Seeds 7–8, compressed and angular as in Actæa.—De Candolle states that the flowers are sometimes digynous; but we have never observed more than a single ovary in a flower.

§ 2. *Di-octogynous (rarely monogynous): follicles pod-shaped: seeds flat, vertical, echinate with little scales: staminodia several, spatulate, or concave and nectariferous at the base; rarely none.*—Cimicifuga, Fisch. & Meyer.

2. *C. cordifolia* (Pursh): leaves biternate; leaflets broadly cordate, 3–5-lobed; ovaries 1–3, glabrous; petals spatulate, bifid; follicles oblong, sessile. —*Pursh, fl.* 2. *p.* 373; *Ell. sk.* 2. *p.* 17. (excl. syn.); *Fisch. & Mey. l. c.; Bot. mag. t.* 2069. C. Americana, *Muhl.! cat. ed.* 2. *p.* 54. Actæa cordifolia, *DC. prodr.* 1. *p.* 64.

Shady woods on high mountains of Carolina, *Pursh, Muhlenberg!*—About 3 feet high. Leaflets inequilateral, large. Racemes paniculate, elongated, glabrous. Sepals 5, nearly orbicular. Petals 2–3 (or none), cleft nearly one-third their length; the segments obtuse and thickened. Follicles about three-fourths of an inch long, acuminate with a short hooked beak. Seeds 8–10, oblong, thickly invested with brown chaffy scales.

3. *C. elata* (Nutt.! mss.): "leaves biternate; leaflets cordate, lobed, incisely toothed, pubescent beneath; ovaries 2–3, glabrous; petals none; follicles oblong, sessile."—C. fœtida, *Pursh, fl.* 2. *p.* 373?

"Shady woods of the Oregon.—Much taller than C. cordifolia (6–8 feet high), with the leaves smaller, thinner, and more distinctly lobed. The flowers smaller and rather distant, instead of being crowded." *Nutt.*—Racemes short and paniculate, as in C. fœtida; while in C. cordata they are elongated, as in C. racemosa. The petals seem to be always wanting in C. elata.

4. *C. Americana* (Michx.): leaves triternate; segments ovate; the terminal 3-parted or 3-cleft, incisely lobed, cuneiform or subcordate at the base; ovaries 2–5, stipitate, glabrous; petals concave, sessile, nectariferous at the base, 2-lobed; follicles obovate, on slender stipes.—*Michx.! fl.* 1. *p.* 316; *Fisch. & Mey. l. c.* C. podocarpa, *Ell. sk.* 2. *p.* 16. Actæa podocarpa, *DC. prodr.* 1. *p.* 64; *Deless. ic.* 1. *t.* 66. A. pentacarpa, *Michx.! herb.*

High mountains of North Carolina, *Michaux! Mr. Curtis!* Pennsylvania and Virginia, *Mr. J. McNab!*—About four feet high, glabrous. Leaflets

2–4 inches long, thin, coarsely serrate and incised; the serratures mucronate. Panicle (in fruit) nearly 2 feet long. Flowers smaller than in C. racemosa, on short bracteate pedicels; the upper ones often with but 2 or 3 ovaries. Sepals 5. Petals resembling those of C. fœtida, but smaller, and more distinctly 2-lobed. Follicles very obtuse, scarcely beaked; the persistent slender style subterminal. Seeds 6–8, oblong, with long light-colored chaff.

17. TRAUTVETTERIA. *Fisch. & Meyer, ind. sem. St. Petersb.* 1835, *p.* 22.

Sepals 4–5. Petals or sterile filaments none. Stamens numerous: anthers introrse. Carpels 15–20, membranaceous and indehiscent, 3-carinate, 1-seeded, tipped with the very short hooked style. Seed erect.—Perennial herbs. Leaves palmately lobed. Stems simple or branching above. Inflorescence cymose.

1. *T. palmata* (Fisch. & Meyer): leaves slightly coriaceous, with conspicuous reticulated veins; cyme mostly compound.—Cimicifuga palmata, *Michx.! fl.* 1. *p.* 316; *Pursh, fl.* 2. *p.* 373; *Ell. sk,* 2. *p.* 17. Actæa palmata, *DC. syst.* 1. *p.* 383; *Bot. mag. t.* 1630. Thalictrum ranunculinum, *Muhl. in Willd. enum.?* Hydrastis, *Lam. ill. t.* 500; *Poir. suppl.* 3. *p.* 71.
α. lobes of the leaves incisely lobed and serrate.
β. lobes of the upper leaves lanceolate, serrulate.
Along streams and mountain rivulets, North Carolina! to Tennessee! β. Kentucky,—*Short!* July–Aug.—Stem 2–3 feet high. Leaves 2–3, large, 5–9-lobed (the lowest on a long petiole), with smaller sessile ones subtending the branches of the cyme. Cyme fastigiate, nearly simple or much branched, dichotomously corymbose, loosely flowered: pedicels ebracteate. Sepals orbicular, concave (the veins arranged after the same manner as in the leaves). Achenia utriculate, small, gibbous on the back, carinate, also with 2 lateral ribs. Seed very small.

2. T. *grandis* (Nutt.! mss.): "leaves membranaceous, the veins scarcely prominent; cyme nearly simple.—Cimicifuga palmata, *Hook. fl. Bor.-Am.* 1. *p.* 26.
"Shady woods of the Oregon. A taller and larger plant than the preceding, with thinner, more acuminate, sharply and deeply toothed leaves. The flowers are also larger." *Nutt.*—Perhaps scarcely distinct: the more membranaceous leaves may be owing to the shady situations.

18. THALICTRUM. *Linn.*; *DC. syst.* 1. *p.* 168.

Sepals 4, rarely 5. Petals none. Stamens numerous: anthers innate. Carpels (achenia) 4–15, pointed with the style or stigma, sulcate or ribbed, sometimes inflated. Seed suspended.—Perennial herbs. Leaves 2–3-ternately divided. Flowers corymbose or paniculate, often diœcious or polygamous, greenish, white, or yellow.

* *Carpels inflated or stipitate: sepals caducous.*

1. *T. clavatum* (DC.): flowers perfect (monœcious, DC.); filaments clavate; anthers elliptical, pointless; carpels compressed, not striate, stipi-

tate, when old inflated, longer than the style; leaves triternate; leaflets suborbicular, crenately lobed, glabrous, glaucous beneath.—*Hook. fl. Bor.-Am.* 1. *p.* 2; *DC.* 1. *syst.! p.* 171; *Deless. ic.* 1. *t.* 6.

Sandhills of Portage La Loche, lat. 50°, *Dr. Richardson;* Canada? *Michaux.* (v. s. in herb. mus. Paris.)—Plant. 1–1½ foot high. Leaflets as large as in T. dioicum. Panicle few-flowered, loose; pedicels long. Flowers erect. Stamens few, as long as the sepals. Filaments conspicuously dilated. Ovaries 8–10 (*Hook.*) (5–6, DC.) ovate gibbous; the persistent style ⅓ the length of the ovary. *Hook.* This plant was described by De Candolle from specimens in the herbarium of Michaux. The locality is not recorded, neither is the plant described in Michaux's Flora. Hooker asks whether it may not be a state of T. dioicum; but that species has remarkably slender and scarcely dilated filaments, and linear mucronate anthers.

2. *T. filipes:* polygamous (?): carpels semi-obovate, compressed, striate, each on a slender stipe, nearly its own length, acute; style none; leaves biternate; petiolate; leaflets roundish, obtusely 3–5-lobed, glaucous beneath.

Linville, North Carolina, *Mr. Curtis!*—Plant 2 feet or more in height, very smooth. Leaves thin, on petioles an inch long, exstipellate. Panicle corymbose, loose and capillary. Flowers not seen. Carpels 4–6, widely spreading, membranaceous, marked with several prominent branching veins, acute, and tipped with a minute stigma, but not rostrate; the base tapering into a long almost capillary stipe. Seed much smaller than the cavity.—This species, the flowers of which we have not seen, is nearly related to T. clavatum; but differs in the veined carpels, the entire absence of the style, and the long slender stipe.

** *Carpels ovate or oblong, ribbed, sessile or slightly stipitate: sepals caducous.*

3. *T. dioicum* (Linn.): very glabrous, diœcious or polygamous; filaments filiform; anthers linear, elongated, mucronate; leaves on short petioles, ternately decompound; leaflets rounded, crenately and obtusely lobed, glaucous beneath; peduncles as long as the leaves; carpels oblong, sessile, strongly ribbed, twice the length of the slender curved style.—*DC. prodr.* 1. *p.* 12; *Pursh! fl.* 2. *p.* 388; *Hook.! fl. Bor.-Am.* 1. *p.* 3. T. lævigatum, *Michx.! fl.* 1. *p.* 322. T. purpurascens! (excl. syn.), rugosum, & Carolinianum, *DC. l. c.*

β ? stipitatum: carpels conspicuously stipitate.

Rocky woods, Mackenzie's River, lat. 67°, to the mountains of S. Carolina! and west to Oregon! *β.* Table Mountain, N. Carolina, *Mr. Curtis!* April–May.—Stem 1–2 feet high. Common petioles an inch or more in length. Leaflets about three-fourths of an inch in diameter, commonly somewhat 3-lobed; the lobes crenate-toothed. Panicles loose, 15–20-flowered. Sepals 4–5, oval, obtuse, often purple. Filaments much longer than the sepals, almost capillary and nearly of the same thickness throughout; anthers yellowish. Fertile flowers with 6–8 stamens. Ovaries 6–10.—The variety *β.* we have only seen in fruit. The stipes are more than half the length of the strongly ribbed carpels; and the persistent style is as long as the stipe. In other respects the resemblance to T. dioicum is very striking.—T. purpurascens, *DC.* is referred to this species; but we are not certain that his plant is the same as that of Linnæus.

4. *T. Cornuti* (Linn.): diœcious or polygamous; filaments subclavate; anthers oblong, obtuse; leaves sessile (the petiole divided to the base), ternately decompound; leaflets roundish-obovate or elliptical, 3-lobed, with the lobes rather acute, glaucous or pubescent beneath; peduncles longer than the leaves; carpels subsessile, ribbed, twice as long as the style; stigma linear.—*Linn. sp. p.* 768; *Pursh! fl.* 2. *p.* 388; *Hook.! fl. Bor.-Am.* 1. *p.*

3, *t.* 2. T. pubescens, *Pursh! l. c.* T. revolutum! & T. corynellum, *DC. prodr.* 1. *p.* 12. T. polygamum, *Muhl.! cat. ed.* 2. *p.* 56. T. rugosum, *Ait. Kew.* (*ed.* 1.) 1. *p.* 262. T. purpurascens, *Pursh! in herb. Bart.* T. rugosum & Cornuti, *Darlingt.! fl. Cest. p.* 334.

Banks of rivers and in wet meadows, Canada (lat. 56°) to Georgia; Western States! June–July.—Stem 3–6 feet high, branching. Leaves very large, always sessile; divisions of the petiole elongated. Leaflets variable in size, form, and pubescence, ovate, elliptical, or roundish; often cordate at the base, but sometimes cuneiform; the veins scarcely prominent, or elevated and rugose; margin commonly revolute. Panicle compound. Sepals white, oblong, small. Filaments more or less clavate; anthers sometimes linear-oblong and slightly pointed. Carpels glabrous, about 3 lines long.

5. *T. alpinum* (Linn.): flowers perfect, in a simple raceme, nodding; filaments filiform; anthers oblong-linear; stem simple, nearly naked; leaves biternate; leaflets glabrous; stigma linear; carpels ovate, sessile.—*Linn. sp. p.* 767; *DC. syst.* 1. *p.* 175.

Canada, *Kalm;* Island of Anticosti, *Pursh!* (v. s. in herb. *Shepherd*); Newfoundland, *Banks;* Greenland, *Hornemann.*—Plant scarcely a span high. Leaves mostly radical, petiolate; leaflets about one-third of an inch long, roundish, subcoriaceous, crenately toothed. Stem scapiform. Raceme 6–10-flowered: pedicels slender. Sepals 4, oblong. Ovaries few: styles almost wanting: stigmas thick and pubescent.—The American plant exactly resembles our specimens of T. alpinum from the North of Europe.

*** *Sepals petaloid, not caducous, longer than the stamens: root grumous.*

6. *T. anemonoides* (Michx.): root fasciculately tuberous; flowers few, umbellate; floral leaves involucriform; radical ones biternate.—*Michx.! fl.* 1. *p.* 322; *DC. prodr.* 1. *p.* 15; *Hook. fl. Bor.-Am.* 1. *p.* 4; *Juss. ann. mus.* 3. *p.* 249. *t.* 21. *f.* 2; *Darlingt.! fl. Cest. p.* 333. Anemone thalictroides, *Linn.; Pursh, fl.* 2. *p.* 387; *Bart. fl. Am. Sept.* 2. *t.* 44; *Bot. mag. t.* 866.

Canada! to N. Carolina! & Western States! April–May.—Root composed of 4–6 clavate tubers. Radical leaves on long petioles: cauline leaves 1–3, sessile, trifoliolate, verticillate; leaflets petiolulate, roundish, obtusely 3–5-lobed. Stems 4–8 inches high, commonly several from one root. Peduncles 3–6, one-flowered, 1–2 inches long. Flowers nearly an inch in diameter. Sepals 6–10, elliptical, white, sometimes slightly tinged with purple. Filaments filiform, or somewhat clavate: anthers oblong. Ovaries 6–10: style none: stigma simple. Carpels oblong, acute, prominently ribbed, substipitate. —"Habit and frondescence of Isopyrum, with the inflorescence of Anemone, and the fruit of Thalictrum." *DC.*

In the herbarium of the late Rev. L. D. von Schweinitz are specimens of a Thalictrum, which may be distinct from any of the preceding; but for want of the fruit, it is here recorded only as a provisional species.

7. *T. nudicaule* (Schwein. mss.): flowers perfect (or polygamous?); filaments somewhat clavate; anthers oblong, obtuse; leaf solitary, radical, on a long petiole, biternate; leaflets membranaceous, roundish, obtusely lobed, subcordate; stem slender, nearly naked (tall), the summit a little branched, and bearing several 3-foliolate leaves and a small few- (4–8-) flowered panicle; stigma simple, sessile.

On rocks, Patrick county, Virginia, and on the Yadkin River, North Carolina, *Schweinitz!*—Stem 2 feet high. Leaflets glabrous, about three-fourths of an inch long. Cauline leaves at the summit of the stem, very small. Panicle as long as the leaves. Flowers very small. Sepals 4–5, greenish, oblong. Ovaries 4–6, subsessile, ovate, acute, pointed with the small simple stigma.

19. ZANTHORHIZA. *Marsh. arb.; Lam. ill. t.* 854; *DC. syst.* 1. *p.* 386.

Sepals 5. Petals 5, of 2 roundish lobes raised on a pedicel. Stamens 5–10. Ovaries 5–10, pointed with the styles, 2–3-ovuled. Follicles small, mostly 1-seeded. Seed suspended.—Suffrutescent: the root and bark yellow and bitter. Leaves pinnately divided. Racemes appearing with the leaves, axillary, compound. Flowers minute, dark purple, often by abortion polygamous.

Z. apiifolia (L'Her.) *stirp. nov. p.* 79. *t.* 38; *Michx.! fl.* 1. *p.* 186; *Bart. veg. mat. med.* 2. *t.* 46; *DC. prodr.* 1. *p.* 65. Xanthorhiza simplicissima, *Marsh. l. c.*
Shady banks of rivers, Pennsylvania! to Georgia! and Texas! March–April.—Root large. Leaves pinnate or bipinnate; leaflets incised.—*Yellow-root.*

TRIBE V. HYDRASTIDEÆ.

20. HYDRASTIS. *Linn.; Juss. gen. p.* 232; *Michx. fl.* 1. *p.* 317; *DC. syst.* 1. *p.* 217.

Sepals 3, ovate, petaloid, caducous. Petals none. Stamens numerous: anthers innate. Ovaries numerous, 2-ovuled: styles short: stigmas dilated, induplicate. Fruit composed of the baccate 1–2-seeded carpels, crowded in a globose head.—A perennial herb; the rhizoma and roots yellow and bitter. Stem simple, 2-leaved, 1-flowered; the foliage and fruit resembling a Rubus.

H. Canadensis (Linn.)—*Michx.! fl. l. c.; Pursh, fl.* 2. *p.* 389; *Ell. sk.* 2. *p.* 55; *DC. prodr.* 1. *p.* 53. Warneria Canadensis, *Mill. dict.*
In shady woods, particularly on the sides of mountains, Canada! to Carolina; west to Ohio! and Kentucky! April–May.—Leaves pubescent when young, cordate, palmately 3–5-lobed, the lobes doubly serrate; lower leaf petioled, the upper subsessile. Peduncle an inch long. Calyx pale rose-color. Fruit red. Seeds obovate: testa crustaceous, nearly black, shining, lined with the thin and membranous tegmen. Embryo minute, at the base of the somewhat fleshy and oily albumen.

SUBORDER PÆONIEÆ. *Arn.*

Sepals 5, unequal, foliaceous, persistent. Petals 5 (6–10 by culture), destitute of claws. Stamens very numerous: anthers adnate, introrse. Ovaries 2–5, the base surrounded by a fleshy annular disk: stigmas sessile, thick, of two lamellæ, persistent. Carpels follicular, opening above. Seeds several: albumen fleshy.—Herbaceous (rarely shrubby,) plants. Roots fasciculate, thick. Leaves 2-ternately divided. Flowers terminal, solitary, large, purple, rose-color, or white.

20. PÆONIA. *Linn.; Juss. gen. p.* 234; *DC. syst.* 1. *p.* 386.

Character same as of the Suborder.

1. *P. Brownii* (Dougl.): carpels 5, oblong, very glabrous, erect; leaves smooth on both sides, somewhat glaucous, biternate; leaflets ternately divided or pinnatifid, laciniate; laciniæ oblong, those of the lower leaves obtuse. *Hook. fl. Bor.-Am.* 1. *p.* 27.

"Near the confines of perpetual snow on the subalpine range of *Mount Hood*, N. W. America." *Douglas* in *Hook.* "East of the Blue Mountains of Oregon, not in subalpine situations," *Nuttall!* June–July.—Stem striate. Sepals very unequal, oval. Carpels very smooth, oblong, scarcely recurved at the apex. *Hook.* "Petals reddish-purple, never fully expanding." *Nutt.*

2. *P. Californica* (Nutt.! mss.): "carpels 3, glabrous; leaves smooth on both sides (not glaucous), ternate; leaflets broadly cuneate, nearly twice 3-cleft; laciniæ oblong-lanceolate, acute.

"Margins of bushy plains, and in the valleys of the mountains, in the vicinity St. Barbara, Upper California. March–April.—Differs from the preceding in the smaller, less divided and broader leaves, which are deep green on both sides; and the leaflets bifid or trifid, never pinnatifid. Sepals never expanding, one, and sometimes two, of the outer ones ending in a small trifid leaf. Petals small, scarcely exceeding the length of the calyx, deep blood-red. Seeds large, light brown, cylindrical-ovoid." *Nutt.*

ORDER II. MAGNOLIACEÆ. *Juss.*

Magnoliaceæ & Winteraceæ, *R. Br.; Lindl.*

Parts of the flowers arranged in a ternary order. Sepals 3–6, deciduous. Petals 3–30, hypogynous, in several rows: æstivation imbricated. Stamens indefinite, distinct, hypogynous: filaments very short: anthers adnate, introrse. Ovaries several in a single row, or numerous and spicate in several rows, on a torus raised above the stamens: styles short or none: stigmas simple. Fruit consisting of numerous 1–2-seeded carpels, follicular or baccate, or woody, or fleshy, aggregated or connate in a strobiliform manner upon the elongated torus; sometimes samaroid. Seeds anatropous, suspended or ascending. Embryo minute, at the base of fleshy homogeneous albumen.—Trees or shrubs. Leaves alternate, entire, (pubescent when young) mostly minutely punctate with transparent dots, coriaceous, with convolute caducous stipules. Flowers rarely diclinous, solitary, usually large, fragrant.

The presence of pellucid dots in the leaves of Winteraceæ, and their absence in Magnoliaceæ, is considered a chief mark of distinction by those authors who view the two orders as distinct. These dots, however, exist in all our Magnolias, as well as in the exotic forms we have examined, and may be observed with a lens of very moderate power (if the leaves be too coriaceous at least in the petals) quite as readily as in Illicium. Several species are also slightly aromatic and stimulant, as well as bitter. The leaves, or at least the petals, of all our species of Anonaceæ, and of all the foreign species which we have examined, are dotted in the same manner.—De Candolle states that the American species of Magnolia (§ Magnoliastrum, *DC.*) have extrorse anthers; which is not the case.

TRIBE I. ILLICIEÆ. *DC.*

Winteraceæ, *R. Br.; Lindl.*

Carpels in a single whorl. Anthers short.—Aromatic & stimulant.

1. ILLICIUM. *Linn.; Gærtn. fr.* 1. *p.* 338. *t.* 69.

Sepals 3–6, petaloid. Petals 9–30. Follicles stellate, 1-seeded. Seeds smooth and shining.—Evergreen glabrous shrubs; the bruised leaves and carpels exhaling the odor of anise.

1. *I. Floridanum* (Ellis): leaves oval or oblong, acuminate; petals 27–30, dark purple, the outermost oblong, the inner ligulate.—*Ellis, in phil. trans.* 60. *p.* 524. *t.* 12; *Lam. ill. t.* 493; *Michx. fl.* 1. *p.* 526; *DC. prodr.* 1 *p.* 77.
Florida! Alabama! & Louisiana: in swamps. May.

2. *I. parviflorum* (Michx.): leaves oblong; flowers yellowish; petals ovate or roundish, 6–12.—*Michx.! l. c.; DC. l. c.; Ell. sk.* 2. *p.* 35; *Nutt.! gen.* 2. *p.* 18. I. anisatum. *Bartr. trav.*
Georgia! & Florida! May–June.—Leaves rather obtuse. Flowers nodding, much smaller.

TRIBE II. MAGNOLIEÆ. *DC.*

Carpels spicate on the elongated torus. Anthers long. Scales of the leaf-bud formed of convolute stipules.

2. MAGNOLIA. *Linn.; Gærtn. fr.* 1. *p.* 343. *t.* 70.

Sepals 3, caducous, sometimes none or confounded with the petals. Petals 6–12, caducous. Carpels 1–2-seeded, persistent, forming a strobile-like fruit, dehiscent by the dorsal suture. Seeds baccate, subcordate, suspended, hanging, when ripe and the carpel opens, by a long funiculus composed entirely of spiral vessels.—Fine trees (except M. glauca.)

1. *M. grandiflora* (Linn.): leaves evergreen, oval-oblong, coriaceous, shining above, ferruginous-tomentose beneath; petals 9–12, obovate, expanding.—*Walt. Car. p.* 158; *Lam. ill. t.* 490; *Michx.! fl.* 1. *p.* 327; *Michx. f. sylv.* 1. *p.* 269. *t.* 71; *Ell. sk.* 2. *p.* 36.
N. Carolina! to Florida; west to the Mississippi! May–Aug.—Trunk naked, 60–70 feet high, crowned with a pyramidal head; branches somewhat whorled. Leaves 6–8 inches long. Flowers white, 7–8 inches broad; petals abruptly unguiculate.

2. *M. glauca* (Linn.): leaves oblong or oval, obtuse, white beneath; petals 9–12, ovate, narrowed at the base, erect.—*Michx.! fl.* 1. *p.* 327; *Michx.*

f. sylv. 1. *p.* 274. *t.* 52; *Ell. sk.* 2. *p.* 27; *Bigel. fl. Bost. ed.* 2. *p.* 229, & *med. bot. t.* 26.

Swamps, Massachusetts! to Louisiana! and Missouri. May–June.—A shrub; leaves deciduous (often silky beneath when young): in the Southern States sometimes a tree with evergreen leaves. (*Ell.*) Flowers white, 2–3 inches broad, very fragrant.

3. *M. Umbrella* (Lam.): leaves deciduous, oblong or obovate-lanceolate; petals 9, narrow; sepals 3, reflexed.—*Lam. dict.* 3. *p.* 673; *DC. prodr.* 1. *p.* 80. M. tripetala, *Linn.*; *Michx.! fl.* 1. *p.* 327; *Michx. f. sylv.* 1. *p.* 285. *t.* 54; *Ell. sk.* 2. *p.* 38.

Southern and Western States! New-York, *Michx. f.* (sed ?) and Pennsylvania, *Muhlenberg.* May–June.—Tree 30–40 feet high. Leaves crowded in an umbellate manner on the extremity of the irregular branches (whence the name *Umbrella-tree*), 1–2 feet long, acuminate. Flowers white, 7–8 inches in diameter; odor unpleasant. Fruit rose-color, 4–5 inches long.

4. *M. acuminata* (Linn.): leaves deciduous, oval, acuminate (pubescent beneath); petals 6–9, oblong-obovate.—*Michx.! fl.* 1. *p.* 328; *Michx. f. sylv.* 1. *p.* 278. *t.* 53; *Pursh, fl.* 2. *p.* 381.

New-York! to Georgia! confined to the mountains in the Southern States. June–July.—Tree 60–80 feet high, 4–5 feet in diameter at the base. Flowers slightly fragrant, 3–4 inches in diameter: petals scarcely expanding, yellowish, glaucous externally. Fruit cylindrical, 3 inches long, when green slightly resembling a young cucumber (whence the name, *Cucumber-tree*).

5. *M. cordata* (Michx.): leaves deciduous, broadly ovate, subcordate, acute, whitish and pubescent beneath; petals 6–9, oblong.—*Michx. fl.* 1. *p.* 328; *Michx. f. sylv.* 1. *p.* 282. *t.* 54; *Ell. sk.* 2. *p.* 38; *Bot. mag. t.* 325; *Nutt. gen.* 2. *p.* 18. Ric.

N. Carolina! to Georgia! on mountains. April–May.—Tree 20–40 or 50 feet high; bark deeply furrowed. Leaves 4–6 inches long. Flowers yellow, faintly streaked with red.

6. *M. Fraseri* (Walt.): leaves deciduous (glabrous on both sides or glaucescent beneath), spatulate-obovate, auriculate at the base; sepals 3, spreading; petals 9, oblong, attenuate at the base.—*Walt. Car. p.* 159. M. auriculata, *Lam. dict.* 3. *p.* 673; *Bartr. trav.*; *Michx.! fl.* 1. *p.* 328; *Michx. f. sylv.* 1. *p.* 287. *t.* 56; *Bot. mag. t.* 1206; *Ell. sk.* 2. *p.* 39.

β. *pyramidata* (Nutt.): leaves broader and shorter. *Nutt. gen.* 2. *p.* 18. —M. pyramidata, *Bartr.*; *Pursh, fl.* 2. *p.* 381.

On the Alleghany Mountains, from the head waters of the Susquehannah (*Pursh? ?*) (Virginia *Michx. f.*) to Georgia! β. S. Carolina, Georgia and Florida! near the coast. April–May.—Tree 30–40 feet high. Leaves 8–12 inches long, mostly green on both sides, somewhat rhomboid; auricles narrow, rounded. Petals oval-lanceolate or subspatulate, white, 2–3 inches long. Fruit oval-oblong, rose-color.—The specific name of Walter having been first published must of necessity be restored.

7. *M. macrophylla* (Michx.): leaves deciduous, oblong-ovate, narrowed and subcordate at the base, glaucous and whitish beneath; petals 6, ovate. —*Michx.! fl.* 1. *p.* 327; *Michx. f. sylv.* 1. *p.* 292. *t.* 57; *Nutt. gen.* 2. *p.* 18; *Ell. sk.* 2. *p.* 40.

Lincolnton, N. Carolina! and in Tennessee, near Cumberland River. Georgia, on the Chattahouchie River, *Dr. Chapman! Dr. Boykin.* May–July.—Trunk naked below, 30–40 feet high; bark white. Leaves crowded on the end of the branches, 1–3 feet long, scarcely auricled at the base. Flowers when fully expanded 8–10 inches in diameter, white: petals with a purple spot on the inside at the base. Fruit ovate, rose-color.

3. LIRIODENDRON. *Linn.; Gærtn. fr. t.* 178.

Sepals 3, caducous. Petas 6, campanulate. Carpels densely imbricated, 1–2-seeded, indehiscent, deciduous; the apex produced into a lanceolate wing.—A large tree. Leaves 3-lobed, the terminal lobe emarginately truncate, the lateral ones with 2 sinuses. Flowers greenish-yellow, orange within. Stipules flat.

L. Tulipifera (Linn.)—*Michx. fl.* 1. *p.* 326; *Michx. f. sylv.* 1. *p.* 302. *t.* 61; *Bigel. med. bot. t.* 31.
Canada! to Louisiana and Florida. May–June.—Trunk sometimes 140 feet high, and 8–9 in diameter.—*Tulip-tree. White-wood.*

ORDER III. ANONACEÆ. *Juss.*

Sepals 3–4, persistent, often united at the base. Petals 6, in two rows, hypogynous, coriaceous: æstivation valvular. Stamens indefinite, packed closely together on a hypogynous torus: filaments short: anthers adnate, extrorse; connectivum large, sometimes nectariferous at the apex. Ovaries usually numerous and closely packed, separate or sometimes cohering: styles short or none: stigmas simple: ovules solitary or several, erect or ascending. Fruit consisting of dry or succulent, 1- or many-seeded carpels, which are distinct or concrete into a fleshy mass. Seeds anatropous; testa brittle. Embryo minute, at the base of hard ruminated albumen.—Trees or shrubs. Leaves (and branches pubescent when young) alternate, exstipulate, distinctly articulated with the stem, entire. Flowers axillary, mostly solitary. Petals, and commonly the leaves, minutely punctate with pellucid dots.

Anona glabra, Linn. (Anona foliis latis, &c. *Catesb. Car. t.* 64.) a West Indian species, has not been met with in the United States. Catesby was doubtless mistaken as to the locality.—Prof. Bailey, of West Point U. S. Military Academy, has seeds of a large-fruited species of Anona from Key West.

1. UVARIA. *Linn.; Blume, fl. Jav. ex. Alph. DC. mem. Anon. p.* 25.

Uvaria, Asimina, and Porcelia, *of Authors.* Orchidocarpum, *Mchx.*

Sepals 3, united at the base. Petals 6, in a double series. Ovaries few or numerous. Carpels oblong, baccate, often torulose, pulpy within, several-seeded.—Aromatic shrubs or trees.

§ *Carpels by abortion 2–3 or solitary: inner petals smallest: flowers solitary on short axillary peduncles, which are sometimes bracteolate.* —ASIMINA, Adans.

* *Leaves membranaceous: flowers expanding at or before the time of leafing, arising from the axils of former leaves.*

1. *U. triloba:* leaves oblong-obovate, acuminate; petals dark purple; the exterior orbicular, 3 or 4 times the length of the sepals.—Anona triloba, *Linn.; Michx.! f. sylv.* 2. *t.* 60. Porcelia triloba, *Pers. syn.* 2. *p.* 95; *Pursh, fl.* 2. *p.* 383. Orchidocarpum arietinum, *Michx.! fl.* 1. *p.* 329. Asimina triloba, *Dunal, Anon. p.* 81; *Ell. sk.* 2. *p.* 42.

Banks of streams, Middle, Southern, and Western States! March–April. —A small tree 15–20 feet high. Branches and leaves nearly glabrous. Ovaries often 8. Fruit of a single carpel (2–3 inches long), or sometimes of 2–3 connate carpels, yellowish, esculent, very fragrant.—*Papaw.*

2. *U. parviflora:* leaves oval-obovate, acuminate; petals greenish-purple; the exterior oval, hardly twice the length of the sepals.—Orchidocarpum parviflorum, *Michx.! l. c.* Porcelia parviflora, *Pers. l. c.* Asimina parviflora, *Dunal, Anon. p.* 82. *t.* 9; *Ell. sk.* 2. *p.* 41.

Woods, Virginia to Florida!—A low shrub. Leaves and branches nearly glabrous except when very young. Flowers not half the size of U. triloba: peduncles shorter than the flowers. Fruit as large as a plum, somewhat fleshy.

3. *U. obovata:* leaves oblong-obovate, obtuse, ferruginous-tomentose beneath; petals (very large) yellowish-white; the exterior obovate, many times larger than the sepals.—Anona grandiflora, *Bartr. trav. t.* 2. A. obovata, *Willd. sp.* 2. *p.* 1269. Orchidocarpum grandiflorum, *Michx.! fl.* 1. *p.* 330. Porcelia grandiflora, *Pers. l. c.*; *Nutt.! gen.* 2. *p.* 19. Asimina grandiflora, *Dunal, l. c. t.* 11; *Ell. sk.* 2. *p.* 42.

Sandy woods, Georgia! and Florida.!—Shrub 1–2 feet high, tomentose when young. Outer petals 2 inches or more in length: inner ones much shorter, linear-oblong.—The oldest and most appropriate specific name is pre-occupied in Uvaria.

** *Leaves coriaceous, persistent: flowers arising from the axils of present leaves.*

4. *U. pygmæa:* leaves elongated, oblanceolate, obovate, oblong, or elliptical; petals reddish-brown; the exterior obovate-oblong, many times longer than the sepals.—Anona pygmæa, *Bartr. trav. t.* 1. Orchidocarpum pygmæum, *Michx.! l. c.* Porcelia pygmæa, *Pers. l. c.; Nutt.! gen.* 2. *p.* 19. Asimina pygmæa, *Dunal, l. c. t.* 10; *Ell. sk.* 2. *p.* 43.

β. flowers all terminating short leafy branches.

Sandy fields, Georgia! and Florida!—Suffruticose, 6–20 inches high, glabrous. Leaves variable, when narrow often 6 inches long, sometimes 1½ inch broad, obtuse or acute. Outer petals an inch long: the inner much smaller, linear-oblong.

ORDER IV. SCHIZANDRACEÆ. *Blume.*

Flowers monœcious, or rarely diœcious; the floral envelopes in a ternary order. Sepals 3–6, imbricated in a double series, deciduous; the inner ones similar to the petals. Petals 3–12, imbricated in 1–4 rows, hypogynous. Stamens 5 or indefinite, with very short filaments, coadunate on a subglobose torus. Ovaries numerous, aggregated on a

conical, at length elongated torus: styles minute: stigmas simple: ovules 1–2. Carpels baccate in fruit, 1–2-seeded, loosely spicate upon the slender and much elongated torus (glomerate on the conical torus in Kadsura). Albumen fleshy, homogeneous.—Trailing or twining glabrous shrubs (somewhat aromatic). Leaves alternate, entire or denticulate, minutely and sparsely punctate (as also the petals) with pellucid dots. Flowers axillary, on slender peduncles; the uppermost staminate.

1. SCHIZANDRA. *Michx. fl.* 2. *p.* 218. *t.* 47.

Monœcious. Sepals and petals 9–12, confounded with each other, roundish, concave. Stamens 5: anthers subsessile, connate. Carpels inequilateral, 1-seeded, loosely scattered in fruit on the filiform torus. "Embryo included in fleshy green albumen; radicle oblong; cotyledons ovate." *Richard in Michx.*—A trailing or somewhat twining shrub. Leaves entire or repandly denticulate. Flowers small, crimson.

S. coccinea (Michx. l. c.)—*Ell. sk.* 2. *p.* 582; *DC. syst.* 1. *p.* 544; *Bot. mag. t.* 1413; *Audubon, birds of Amer. t.* 74.
In damp woods, S. Carolina! Georgia! and Louisiana! May–June—Stem 10–15 feet long. Leaves ovate or oval, mostly acute or acuminate at each end, on slender petioles. Carpels small, ovoid, red when mature: torus also red. Seed suspended?

The order Schizandraceæ, established by Blume in his splendid Flora Javæ, although indicated in an earlier work, is founded upon Schizandra and two Asiatic genera, viz: Sphærostema (which differs from the former chiefly in its indefinite stamens,) and Kadsura, *Juss.*, which was formerly referred to Anonaceæ.

ORDER V. MENISPERMACEÆ. *Juss.*

Flowers diœcious, rarely monœcious or polygamous. Sepals usually in a double row, 2–4 in each, imbricated in æstivation, deciduous. Petals 1–8 (usually equal in number to the sepals), hypogynous, distinct or sometimes united, rarely none. Stamens distinct or monadelphous, equal in number to the petals and opposite them, or 2–4 times as many: anthers adnate (extrorse or introrse!), or innate and consisting of 4 globose lobes, or with the cells horizontal and placed end to end, opening longitudinally. Ovaries usually several, distinct or rarely united. Drupes baccate, 1-seeded, oblique or lunate, or incurved so that the apex and base are brought into contact; the nut (endocarp) bony, and often tuberculate on the broad margin. Seed heterotropous, conformed to the cavity of the nut. Embryo curved, included in the rather thin fleshy albumen: radicle directed towards the style.—Flexible and climbing shrubs or suffruticose plants. Leaves alternate, without stipules, simple, palmately veined. Flowers minute, in racemes or panicles.

The true structure of the fruit in this order, is given by A. St. Hilaire, in his Flora Braziliæ Meridionalis. After fecundation the ovary begins to grow on one side, and curves until, in most cases, the summit is brought close to the base. The fruit, which is a true drupe, has an obovate or subglobose form, and the nut is curved like a horse-shoe, so that when it is cut transversely it appears to be 2-celled, a false dissepiment being formed by the bending together of the two ends of the fruit. The shell or endocarp is often mistaken for the testa of the seed, the proper integuments being membranaceous. According to De Candolle, the anthers are extrorse; but they are certainly introrse in Menispermum Lyoni, and in some species of Cocculus.

1. COCCULUS. *Bauhin; DC. syst.* 1. *p.* 515.

Flowers diœcious. Sepals 6, in a double series. Petals 6, distinct. Sterile Fl. Stamens 6 (rarely 3), distinct. Fertile Fl. Sometimes 6 abortive stamens. Ovaries 3–6. Drupes 1–6.—Racemes axillary.

Differs from Menispermum chiefly in the stamens being equal in number to the sepals (or rarely half as many), and not twice or more than twice as numerous.

1. *C. Carolinus* (DC.): minutely pubescent; leaves cordate or ovate, entire or obscurely lobed (rarely hastately 3-lobed), mostly obtuse, mucronate, velvety-pubescent underneath; petals biauriculate at the base and embracing the filaments, emarginate; anthers innate, 4-lobed; ovaries 3–6.—*DC. syst.* 1. *p.* 524. Menispermum Carolinianum, *Walt. Car. p.* 248; *Michx. fl.* 2. *p.* 242. Wendlandia populifolia, *Willd. sp.* 2. *p.* 275; *Pursh, fl.* 1. *p.* 252. (excl. syn). W. Caroliniana, *Nutt.! gen.* 1. *p.* 241.

Woods and banks of rivers, North Carolina, *Mr. Curtis!* Georgia, *Le Conte!* Mississippi, *Nuttall!* Arkansas, *Dr. Pitcher!* Kentucky, *Dr. Short!*—Stem slender, sarmentose. Leaves extremely variable in form, 2–4 inches long, and of nearly the same breadth, often quite entire, but usually with several sinuate obtuse lobes, sometimes nearly orbicular-cordate, somewhat coriaceous when mature: petioles 1–4 inches long. Flowers sometimes polygamous? Sterile Fl. in compound racemes which are often 3-parted to the base, greenish-white. Bracteoles mostly solitary. Sepals 6, orbicular, or obovate, concave. Petals 6, fleshy, with 2 inflexed auricles at the base of each. Stamens 6: filaments thickened at the summit, on which is borne the didymous anther-cells, appearing like 4 approximated spherules. Drupe red, as large as a small pea, compressed; the nut curved into nearly a complete ring, notched on the margin. Seed terete, filling the circular cavity of the nut. Embryo in the axis of the fleshy albumen and about the same length: cotyledons linear, approximated.

2. MENISPERMUM. *Linn.; DC. syst.* 1. *p.* 539.

Flowers diœcious. Sepals 4–8, in a double series. Petals 4–7, in a double series; sometimes none. Sterile Fl. Stamens 12–20, distinct. Fertile Fl. Ovaries 2–4 (usually solitary). Drupes 1–4 (usually solitary), globose-reniform.—Racemes axillary or supra-axillary. Sterile and fertile flowers often dissimilar.

In M. Dauricum, *DC.* (*Deless. ic. t.* 100.) the sepals are 6 in number and the corolla is wanting.

§ 1. *Fertile flowers without abortive stamens: nut forming a nearly complete ring.*

1. *M. Canadense* (Linn.): leaves peltate (with the petiole near the base), somewhat glabrous, obtusely angled; angles obtuse or acute; racemes compound; sepals 4–7; petals 6–7; very small, somewhat fleshy; stamens 15–19; anthers innate, 4-lobed.—*Michx.! fl.* 2. *p.* 241; *Pursh, fl.* 2. *p.* 370; *DC. syst.* 2. *p.* 540; *Ell. sk.* 2. *p.* 715. M. Virginicum, *Linn.*; *Willd. sp.* 4. *p.* 824.

Banks of rivers and in thickets, Canada! to S. Carolina, and Arkansas! July.—Stem herbaceous or suffruticose at the base, 8–12 feet long, slender. Leaves 3–4 inches long, rather broader than wide, with 3–5 angular lobes. Flowers small, greenish-yellow; the sterile ones in paniculate supra-axillary racemes: pedicels about a line long, bracteolate. Sepals commonly 4–5, obovate-oblong. Petals much smaller than the sepals, orbicular, obtusely cuneate at the base. Filaments scarcely thickened at the summit: anthers of 4 spherical lobes. Drupe stipitate, about one-third of an inch in diameter, nearly black when mature, pruinose, curved so that the style and base are nearly in contact; pulp small in quantity. Nut much compressed, forming a nearly complete ring. Seed terete, annular. Embryo linear, in the axis of a fleshy albumen, and nearly of the same length.

§ 2. *Sepals* 6: *petals none: sterile flowers with* 12 *stamens; the anthers adnate, parallel with the filament: fertile flowers with* 6 *abortive stamens: ovaries* 3: *drupe solitary, oval, the style nearly at the summit: nut concavo-convex, deeply excavated in front.*—CALYCOCARPUM, Nutt. mss.

2. *M. Lyoni* (Pursh): leaves 3–5-lobed, not peltate; the lobes acuminate and sometimes crenulate; petioles very long; racemes somewhat compound. —*Pursh, fl.* 2. *p.* 371; *DC. prodr.* 1. *p.* 103.

Near New Orleans, *Dr. Ingalls!* Arkansas, *Nuttall!* Kentucky and Tennessee, *Pursh.*—Stem climbing, about twenty feet long (*Pursh*). Leaves 3–7 inches in diameter, sparsely hirsute on the veins underneath; the sinuses commonly rounded, and often extending beyond the centre of the lamina. Racemes shorter than the petioles, supra-axillary; the pedicels 1–4-flowered. STERILE FL. Bracteole at the base of the sepals minute. Sepals obovate-oblong, obtuse. Stamens shorter than the sepals: filaments compressed, rather thick; anther cells linear-oblong, introrse, the cells parallel with the axis of the filament. FERTILE FL. Sepals as in the sterile flowers. Abortive stamens half the length of the sepals; the spurious anther cells oblong and somewhat diverging. Ovaries oblong, straight: stigmas sessile, fimbriate. Drupe exactly oval, nearly an inch long (black, *Pursh*), compressed contrary to the sutures. Nut deeply excavated in front, convex and smooth on the back. Albumen fleshy and oily, in the form of a shallow cup. Embryo very broad, lying in a shallow cavity in the midst of the albumen; cotyledons oval, very thin and membranaceous, at length diverging.—The back and front layers of albumen at length become soldered together, so that the shallow cavity is divided into two cells, in each of which a cotyledon is lodged; as in Cocculus suberosus, *DC.* figured by Gærtner (*Fr.* 1. *t.* 70. *f.* 1.), and as described by Wight & Arnott (*Prodr. fl. Penins. Ind.* 1. *p.* 11). We have seen the ripe fruit of this species only when deprived of its pulp. In the half-grown state it is ovate, nearly straight, and slightly pointed at the summit with a very short style. When fully grown the style appears to be still nearly terminal. The shell is smooth, exactly oval, with a large cavity in front, capable of holding a grain of coffee. In our only specimen, kindly communicated by Mr. Nuttall, the sutures are very distinct and have opened at the summit.

Menispermum smilacinum, *DC. syst.* 2. *p.* 541 (*Cissampelos smilacina*, Linn.?) seems to be only M. Canadense with smoother leaves and more simple racemes than usual. The number of petals is very inconstant in the latter species, there being sometimes only four. The figure in Catesby (*Carol.* 1. *t.* 51.) is probably Cocculus Carolinus, and is certainly not a Menispermum.

ORDER VI. BERBERIDACEÆ. *Vent.; R. Br.*

Berberideæ & Podophyllaceæ *of Authors.*

Sepals deciduous, 3–4–6, imbricated in two rows, often calyculate with petaloid scales. Petals hypogynous, as many as the sepals and opposite them! or twice as many, frequently appendaged or glandular at the base within. Stamens as many as the petals and opposite them! (twice as many in Podophyllum): filaments short: anthers adnate, extrorse, opening by recurved valves, (i. e. the face of each cell separating elastically from the connectivum from the bottom to the top, like a valve) except in Podophyllum. Ovary solitary, simple: style continuous, often somewhat lateral or oblique: stigma orbicular or peltate. Fruit baccate or capsular. Seeds 1 or few, rising from the bottom of the cell, or numerous and attached to the ventral suture in one or more rows, sometimes arillate. Embryo in the axis or near the base of fleshy or horny albumen.

TRIBE I. BERBERIDEÆ.

Embryo in the axis, and occupying nearly the whole length of the albumen: radicle long: cotyledons flat, elliptical.—Shrubs. Leaves compound or reduced to a single leaflet, often stipulate. Flowers yellow. Filaments irritable.

1. BERBERIS. *Linn.; Gærtn. fr. t.* 42.

Sepals 6, usually 3-bracteolate. Petals 6, commonly with 2 distinct glands at the base. Stamens 6. Stigma orbicular, depressed, nearly sessile (rarely a distinct style). Fruit a 1–9-seeded berry. Seeds erect.

§ 1. *Primary leaves changed to spines, in the axils of which the secondary leaves (produced by the developement of the leaf buds, and reduced to a single leaflet) are fascicled.*—BERBERIS, Nutt. DC.

1. *B. vulgaris* (Linn.): branches minutely dotted, with triple spines; leaves oval-obovate, closely serrate with bristly teeth; racemes nodding, many-flowered; petals entire; berries oblong.—*Willd. sp.* 2. *p.* 227; *Lam. ill. t.*

[illegible]
Sem. Hort. Berol. 1854. p. 13. 14.

243; *Bigel. fl. Bost. ed.* 2. *p.* 128; *Hook. fl. Bor.-Am.* 1. *p.* 28, excl. syn. B. vulgaris, *var.* Canadensis, *Torr.! fl.* 1. *p.* 336, not of *Willd.*

In waste places and about cultivated grounds, Canada! and Northern States! doubtless introduced from Europe, but naturalized in many places. Newfoundland, *Morrison* ex *Hook.* May–June.—Stem 3–8 feet high: pith yellowish; the spines sometimes simple. Berries acid.—*Barberry-bush.*

2. *B. Canadensis* (Pursh): branches verrucose-dotted, with short triple spines; leaves spatulate-oblong, remotely serrate with somewhat bristly teeth; racemes subcorymbose, few-flowered; petals emarginate; berries subglobose ~~or oval~~.—*Pursh! fl.* 1. *p.* 219; *Ell. sk.* 1. *p.* 412; *Nutt.! gen.* 1. *p.* 211. B. vulgaris, *Walt. Car. p.* 120; *Michx. fl.* 1. *p.* 205. B. vulgaris, *var.* Canadensis, *Willd. sp.* 2. *p.* 228.

In the Alleghany Mountains, &c. Virginia! N. Carolina! Tennessee! to Georgia. Also Canada, *Pursh*, but this is very doubtful. May–June.—Shrub 2–3 feet high (stem and roots yellow, *Nutt.*) Leaves much smaller and narrower than in the preceding species, attenuate at the base, but nearly sessile; the margin serrulate with 6–8 distant, often inconspicuous, mucronate teeth. Raceme 5–8-flowered, nodding: flowers smaller than in B. vulgaris; fruit smaller and much shorter.—This indigenous species, very distinct from B. vulgaris, with which it has been in some degree confounded, is probably a native of the Southern States only; the Barberry of the New England States and, doubtless, of Canada, being the European species, and certainly not indigenous. Our species was first noticed, apparently, by Marshall, who states that he has a different species of Barberry growing near New River, Virginia. Original specimens, collected and named by Pursh, exist in the herbarium of the late Prof. Barton, now deposited in the rooms of the American Philosophical Society, Philadelphia.—B. emarginata, *Willd.*, a Siberian plant, appears to be very near this species.

§ 2. *Leaves (evergreen) pinnate: petioles articulated at the origin of the leaflets: filaments usually 2-toothed at the summit.*—MAHONIA, Nutt.

3. *B. Aquifolium* (Pursh): leaflets 3–6 pairs (the lower pair not approximated to the base of the petiole), coriaceous, ovate-lanceolate or elliptical-oblong, inequilateral or slightly cordate at the base, 1-nerved, the margin repand with thorny or spinulose-cuspidate teeth; racemes short, nearly erect, clustered; filaments 2-toothed.—*Pursh, fl.* 1. *p.* 219. *t.* 4. (excl. *f.* 5. the fruit.)

α. leaflets about 3 pairs, approximate, oblong-ovate, obtuse, pale green and slightly glaucous both sides, flat or with slightly undulate margins, with 5–9 short cuspidate teeth on each side.—B. Aquifolium, *Pursh, l. c.* (excl. *f.* 1. the separate leaflet); *Hook. fl. Bor.-Am.* 1. *p.* 29, in part. B. pinnata, *Muhl.! cat. ed.* 2. *p.* 36. B. repens, *Lindl. bot. reg. t.* 1176. Mahonia Aquifolium, *Nutt.! gen.* 1. *p.* 212; *DC. syst.* 1. *p.* 20. excl. *β*.

β. leaflets 4–6 pairs, often rather distant, ovate-lanceolate, acutish, "pale but bright green above" (*Hook.*), glaucous beneath, flat or a little undulate along the margins, slightly repand with numerous cuspidate teeth.—B. pinnata *β*., *Hook. l. c.*

γ. leaflets 4–5 pairs, mostly approximate, ovate-lanceolate, acutish, dark green and shining above, when mature rigidly undulate and repandly 6–12-toothed on each margin; teeth thorny and rather divaricate.—B. Aquifolium, *Pursh, l. c. f.* 1. (a separate leaflet) ex *Lindl.; Hook. l. c.* in part; *Lindl. bot. reg. t.* 1425. B. pinnata, *Menzies, in herb. Banks.* B. pinnata *α*. *Hook. l. c.?* excl. syn. *Deless. &c.* Mahonia Aquifolium *β*. Nutkana, *DC. l. c.*

In woods and along rivers throughout Oregon. *α*. From the Great Rapids of the Oregon River (*Lewis*) to the Eastern declivity of the Rocky Mountains, lat. 40°, *Dr. James!* and the sources of the Colorado of the West,

[illegible]

Nuttall! β. In the woody region of the Oregon, *Drummond*, *Nuttall!* γ. Near the coast from lat. 40°–49°, *Menzies*, *Douglas*, *Dr. Scouler!* April. —An under-shrub, 2–5 feet high, branching; the branches often procumbent. Leaflets 1½–3 inches long, obscurely reticulated on both sides, the veins all rising from the midrib. Petals connivent, the innermost bifid at the apex. Berries dark purple.—This species, as we consider it, is liable to much variation in its foliage; and we should incline to follow the authority of Lindley and of Nuttall (who has recently enjoyed the opportunity of examining these plants extensively in their native situations), and to separate our var. α. as a distinct species, did not our specimens of β. communicated by Mr. Nuttall appear manifestly to connect it with γ., the B. Aquifolium of the region near the Pacific coast. The former is moreover the plant originally brought to the United States by Lewis, and described and figured (chiefly) by Pursh, and cultivated in gardens, under the name of B. Aquifolium; so that it ought, in accordance with the rule in such cases, to retain the original name. Pursh erroneously describes the berry as 3-celled, with a 3-lobed stigma; but his figure of the fruit is manifestly taken from some very different plant.*

4. *B. pinnata* (Lagasca): leaflets 4–5 pairs, the lowest pair approximate to the base of the petiole, ovate-lanceolate, repandly dentate with 4–5 teeth on each side; racemes erect [nodding in *fig. Deless.*], very much crowded. *DC.* (under Mahonia.)—B. pinnata, "*Lagasca elench. hort. Madr.*" ex *auct.* Mahonia fascicularis, *DC. syst.* 1. *p.* 19; *Deless. ic.* 2. *t.* 3.

"Western coast of North America near Monterey [California] and Nootka, *Neé* ex *Lagasca;* and in New Spain, *Humb. & Bonpl.*" *DC. l. c.*—The plant from Nootka is doubtless B. Aquifolium, as Lindley suggests. All our specimens from Oregon have the lower pair of leaflets at some distance from the base of the petiole; in which, as in the less crowded racemes, &c. they wholly disagree with the character of De Candolle and the figure of Delessert; and as Hooker changes the specific phrase of his B. pinnata in these particulars, we have the more confidently referred the Oregon plant to B. Aquifolium.

5. *B. nervosa* (Pursh): suffruticose; leaves elongated; leaflets 5–8 pairs (the lowest not approximated to the base of the petiole), ovate or oblong, acute, repandly dentate with thorny teeth, 3–5 nerved from the base, the nerves reticulated; racemes simple, elongated; pedicels very short; filaments 2-toothed.—*Pursh, fl.* 1. *p.* 219. *t.* 5. (excl. the flowers, which belong to B. Aquifolium); *Hook. l. c.* B. glumacea, *Lindl. bot. reg. t.* 1425. Mahonia nervosa, *Nutt. gen.* 1. *p.* 212; *DC. l. c.* M. glumacea, *DC. l. c.*

Oregon, in shady pine woods along the coast, from lat. 40°–49°, *Menzies*, *Dr. Scouler! Nuttall!*—Low; the stem often scarcely rising from the ground. Leaves 1–2 feet long, coriaceous. Racemes spicate, often 6–8 inches long: flowers larger than in B. Aquifolium. Peduncles and petioles surrounded at the base with numerous dry convolute and pungent glumaceous bracts. Berries deep blue.—Pursh, who has made sad work in his figures of Berberis, added the flowers of B. Aquifolium to the leaves of the present species, and thus led De Candolle into mistake.

TRIBE II. NANDINEÆ.

Embryo minute at the base of the albumen, often excentric or oblique with respect to the hilum: radicle short and thick: cotyledons very small, roundish.—Perennial herbs. Leaves decompound or lobed.

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* The separate leaflets attached to Pursh's specimen in herb. Lambert, one of which is figured in his plate, are said in *Brit. fl. gard.* under Mahonia diversifolia, *t.* 94. to belong to that species. There is little doubt, however, that they were taken from the specimen of Menzies in herb. Banks.

2. VANCOUVERIA. *Morren & Decaisne, in ann. sci. nat.* (2. *ser.*) 2. *p.* 351.

Sepals 6, oblong, thin and membranaceous, with 3–9 much smaller oval bracteoles at the base, caducous. Petals 6, obovate, reflexed, the apex somewhat cucullate. Nectaries 6, opposite the petals, linear-spatulate, concave, reflexed. Stamens 6, erect: filaments flat: anthers oblong, mucronate. Style slender: stigma capitate, somewhat perforated. Ovary (follicle-shaped, minutely glandular-pubescent,) with 8–10 ovules attached to the ventral suture in two rows. Fruit.....—Root slender, horizontal, perennial. Leaves radical, 2–3-ternate. Scape slender, simple. Flowers in a lax slightly panicled raceme, on filiform nodding pedicels. Petals white: nectaries with yellow tips.

V. hexandra (Morr. & Decaisne, l. c.)—Epimedium hexandrum, *Hook. fl. Bor.-Am.* 1. *p.* 31. *t.* 13. Caulophyllum gracile, *Dougl. mss.* ex *Hook.*
In deep pine woods around Fort Vancouver, *Douglas & Scouler, Nuttall!* also from Puget Sound to North California, ex *Hook.*—Scape a foot high; flowers small; the floral envelopes all very thin and membranaceous. Leaflets petiolulate, subcordate, obtusely 3–5-lobed, membranaceous, the margin undulate, with a few weak hairs. Immature carpels (follicles) excentric and somewhat arcuate.—The bracteoles, or exterior sepals, are probably variable in number, and are besides very caducous. I find nine in specimens collected by Nuttall, all nearly alike and much smaller than the 6 inner or true sepals which subtend the petals.

3. LEONTICE. *Linn.; R. Br.*

Sepals 3–6. Petals 6, bearing a little scale or nectary at the base within. Carpel membranaceous, caducous or inflated, 2–4-seeded. Seeds erect, globose: albumen horny.

§ *Pericarp bursting at an early period! exposing the finally drupe-like seed raised on its thickened funiculus.*—CAULOPHYLLUM, Michx.

1. *L. thalictroides* (Linn.): leaves 3-ternate; the radical on long petioles; cauline 1–2, destitute of a common petiole, the lower 3-ternate, the upper (when present) much smaller and 2-ternate; leaflets incisely 2–3-lobed.—*R. Br. in Linn. trans.* 12. *p.* 145. *t.* 7; *Torr.! fl.* 1. *p.* 336; *Darlingt. fl. Cest. ed.* 2. *p.* 213. Caulophyllum thalictroides, *Michx.! fl.* 1. *p.* 205. *t.* 21; *Pursh! fl.* 1. *p.* 218.
Woods, Canada! to N. Carolina! and Kentucky! April.—Glaucous when young. Stem simple, 1–2 feet high. Leaflets rather ovate, oblique and subcuneiform at the base, the terminal broadest, petiolulate. Panicle small, racemose. Petals greenish-yellow: scale reniform, viscid. Seeds large (2 or by abortion 1), deep blue when ripe, on long and thick funiculi, baccate: albumen of the form of the seed, very firm.—The roasted seeds have been used as a substitute for coffee.—*Blue Cohosh.*

4. DIPHYLLEIA. *Michx. fl.* 1. *p.* 203. *t.* 19 & 20.

Sepals 3. Petals 6, oval, without glands. Stamens 6. Ovary ovate, excentric: stigma subsessile, peltate, lacunose. Ovules about 4, borne on a short lateral placenta near the base of the cell. Pericarp somewhat baccate, subglobose, 2-3-seeded. Seeds roundish. Embryo very minute at the base of nearly horny albumen, excentric.—Rhizoma thick, horizontal. Stem simple, 2-leaved. Leaves large, alternate, peltate in the manner of Podophyllum, semiorbicular-subreniform, deeply 2-lobed; each division 7-9-lobed; lobes triangular, serrate with triangular teeth. Flowers white, in a simple umbellate cyme.

D. cymosa (Michx.! l. c.)—*Ell. sk.* 1. *p.* 411; *Nutt. gen.* 1. *p.* 209; *DC. syst.* 2. *p.* 29.
Along rivulets in high mountains, Virginia to Georgia! North Carolina, *Mr. Curtis!* (in fruit only)—Stem 1-2 feet high. Seeds reddish: testa membranaceous: hilum somewhat unilateral.—De Candolle, in describing the seed, says, "Embryone recto tenui," which is incorrect. Decaisne, (*Ann. sci. nat.* (2. *ser.*) 2. *p.* 359,) who also examined Michaux's specimen, states that the embryo occupies about a third of the length of the albumen. It is really, however, much smaller than this, although the little cavity in which it is situated is sometimes prolonged to near the centre of the albumen, a circumstance which may possibly have misled the observers. In this, as in some other genera, the peculiar disposition of the veins of the pericarp may be observed which Morren & Decaisne noticed in Epimedium, and which led these botanists to consider the ovary of Berberidaceæ as compound. This peculiarity admits, however, of easy explanation on the supposition that the carpel is formed of a palmately veined leaf.

5. ACHLYS. *DC. syst.* 2. *p.* 35.; *Hook. fl. Bor.-Am.* 1. *p.* 30. *t.* 12.

Sepals and petals none; the achlamydeous flowers sessile in a close spike. Stamens numerous: filaments slender, the outermost dilated at the summit: anthers didymous, subglobose, somewhat unilocular. Ovary 1-seeded: style none: stigma dilated, concave on one side. Seed erect.—A glabrous herb. Rhizoma clothed with glumaceous scales. Leaves radical, on long petioles, ternate: leaflets flabelliform, sinuate-toothed. Scape very long and slender: flowers small, ebracteate.

A. triphylla (DC. l. c.)—Leontice triphylla, *Smith, in Rees, cyclop.*
N. W. Coast, *Menzies.* Near Fort Vancouver, in deep woods, *Dr. Scouler! Nuttall!*

6. JEFFERSONIA. *Bart. in trans. Am. phil. soc.* 3. *p.* 334.

Sepals 4, petaloid. Petals 8, oblong. Stamens 8: anthers linear. Ovary obovate: stigma peltate, subsessile. Capsule substipitate, dehiscent by a transverse chink near the summit. Seeds numerous, crowded in several rows on the broad lateral placenta: aril lacerate, unilateral. Embryo minute, at the base of fleshy albumen.—Rhizoma horizontal, throwing up a simple 1-flowered scape, and 2-foliolate or 2-parted leaves. Habit of Sanguinaria.

J. diphylla (Pers. syn.)—*Pursh! fl.* 1. *p.* 268; *Bot. mag. t.* 1513; *Torr.! fl.* 1. *p.* 399. J. binata, *Bart. l. c.* (with a plate). J. Bartonis, *Michx.! fl.* 1. *p.* 237. Podophyllum diphyllum, *Linn.*

α. leaflets obscurely sinuate, or nearly entire.
β. leaflets incisely 5–7-lobed.—J. lobata, *Nutt.! in jour. acad. Philad.* 7. *p.* 99.
In calcareous soils, New-York! to the mountains of the Southern States! β. Kentucky, *Dr. Short!* April.—Leaves glaucous beneath. Flowers white, an inch in diameter. Sepals sometimes 3 or 5. Petals often 9. Stigma with the margin undulate. Pericarp coriaceous. Seeds obovate-oblong; testa brownish, thick.

7. PODOPHYLLUM. *Linn.; Lam. ill. t.* 449.

Sepals 3, caducous. Petals 6–9, obovate. Stamens 12–18: anthers linear, bursting by a double longitudinal line. Ovary ovate, subsessile, thick, peltate. Capsule fleshy, indehiscent. Seeds numerous in several rows on a thick lateral placenta, which at length becomes very large and pulpy.—A somewhat poisonous herb: rhizoma horizontal (cathartic): stem simple, 2-leaved and 1-flowered at the summit: fruit large, subacid and edible when ripe.

P. peltatum (Linn.)—*Michx.! fl.* 1. *p.* 309; *Bigel. mat. med. t.* 35; *Nutt. gen.* 2. *p.* 10. P. callicarpum, *Raf. fl. Ludov. p.* 14.
Woods and meadows, Canada! to Louisiana. May—Leaves peltate, palmately 5–7-parted; lobes toothed or cleft at the apex; the barren stems producing but a single leaf, which is peltate in the centre. Flower white, large, nodding. Embryo minute at the base of fleshy albumen.—*Mandrake, May-apple*—This genus certainly belongs to Berberidaceæ, as was first indicated by R. Brown (*Congo. p.* 443, note.), notwithstanding the more numerous stamens and the want of the peculiar dehiscence of the anthers.

ORDER VII. CABOMBACEÆ. *Richard.*

Hydropeltideæ, *DC.; Lindl.*

Sepals 3–4, colored inside. Petals 3–4, alternate with the sepals. Stamens definite (6) or somewhat indefinite (18–36), hypogynous: anthers innate. Torus inconspicuous. Ovaries 2–18: stigmas simple. Carpels indehiscent, tipped with the indurated style, 1–2-seeded. Seeds globular, orthotropous, pendulous. Embryo minute, at the base of fleshy albumen, enclosed in the persistent and thickened sac of the nucule: radicle pointing from the hilum.—Aquatic plants, with perennial roots. Floating leaves centrally peltate; submersed foliage filiformly dissected. Flowers small, on 1-flowered peduncles.

1. CABOMBA. *Aublet, fl. Guian.* 1. *p.* 321. *t.* 124; *Richard, in ann. mus.* 17. *p.* 230. *t.* 5; *Gray, in ann. lyc. New-York,* 4. *p.* 46.

Nectris, *Schreb.*

Sepals 3, petaloid. Petals 3. Stamens 6. Ovaries 2–4. Carpels 1–3-seeded.—Leaves opposite; submerged ones filiformly dissected. Flowers yellow or white.

1. *C. Caroliniana* (Gray): floating leaves elliptical or linear-oblong; flowers white; ovaries 3 or 4.—*Gray, l. c.*—C. Aubletii, *Michx. fl.* 1. *p.* 206. Nectris peltata, *Pursh, fl.* 1. *p.* 239. (excl. syn.) N. aquatica, *Nutt. gen.* 1. *p.* 230; *Ell.! sk.* 1. *p.* 416, not of *Willd.*

In stagnant waters, from Newbern, N. Carolina (*Croom!*) to Georgia! and Louisiana! May.—Stem branching. Submersed leaves with a reniform circumscription, 3-parted to the base: segments 3 times di-(middle one tri-) chotomous; lobes filiform, flat, obtuse. Floating leaves about an inch long (often emarginate at one end). Flowers about half an inch in diameter, rarely 2-sepalous and 2-petalous. Petals oval, obtuse, with 2 yellow spots at the base. Carpels ovate.—See *Ann. lyc. l. c.*

2. BRASENIA. *Schreb. gen. p.* 372; *Nutt. gen.* 2. *p.* 23.

Hydropeltis, *Michx.*

Sepals 3–4, colored within, persistent. Petals 3–4. Stamens 18–36. Ovaries 6–18. Carpels oblong-ovate, 2- (or by abortion 1-) seeded.—Stem, peduncles, and lower surface of the centrally peltate leaves, thickly covered with a gelatinous and viscid transparent substance. Flowers brownish-purple.

B. peltata (Pursh)—*Nutt. l. c.; Gray, l. c.*—Hydropeltis purpurea, *Michx.! fl.* 1. *p.* 324, *t.* 29; *Bot. mag. t.* 1147; *DC. prodr.* 1. *p.* 112.

In still water, Canada! to Georgia! and west to Arkansas. July.—Stem 1–10 feet long. Leaves elliptical, alternate. Flowers the size of Caltha palustris.—See *Nutt. l. c.* for remarks on the structure of the stem and leaves.

ORDER VIII. CERATOPHYLLACEÆ. *S. F. Gray.*

Flowers monœcious. Sepals 8–12, united at the base (sometimes cleft at the extremity), persistent. Petals none. Stamens 12–24: anthers sessile, ovate-oblong, 2–3-cuspidate, crowded in the centre of the calyx. Ovary free, ovate, simple: style filiform, oblique: stigma simple. Fruit a crustaceous 1-seeded achenium, apiculate with the indurated persistent style. Seed suspended, orthotropous, destitute of albumen. Embryo with a short radicle, 4 cotyledons (the opposite (upper) ones smaller), and a highly developed gemmule.—Submersed aquatics, growing in still water. Stems branching. Leaves whorled, rather rigid, 2–4-chotomously cleft into filiform or setaceous segments, which are sometimes slightly toothed. Flowers axillary, minute. Fruit armed with the persistent style and usually with two lateral spines.

1. CERATOPHYLLUM. *Linn.; Gærtn. fr. t.* 44; *Ad. Brongn. in ann. sci. nat.* 12. *t.* 44; *Cham. in Linnæa,* 4. *p.* 503; *Gray, in ann. lyc. New-York,* 4. *p.* 41.

Character same as of the Order.

1. *C. apiculatum* (Cham.): achenium elliptical, compressed, with a single weak and short terminal spine; margins wingless, not gibbous, furnished

with a tubercle near the base; the sides slightly convex.—*Cham. l. c. p.* 505. *t.* 5. *fig.* 6. *e.* C. submersum, *DC. prodr.* 3. *p.* 74, fide *Cham.*
California near St. Francisco, *Chamisso.*

2. *C. echinatum* (Gray): achenium elliptical, slightly compressed, with 3 short spines; sides strongly muricated; margins slightly winged, not gibbous, armed with blunt teeth, which finally become weak spines or horns as long as the lateral spines.—*Gray, l. c. p.* 49.—C. demersum (wholly or in part) *of American botanists.*
Princeton, New-Jersey! in deep water.—Achenium rather large. Near C. muricatum, *Cham.*—Specimens of Ceratophyllum are seldom collected in fruit, and little is known concerning our species. On further investigation other species may be discovered, or, which is not very improbable, the various forms that have been described may prove to be states of the same species.

ORDER IX. NELUMBIACEÆ. *Lindl.*

Sepals 4 or 5. Petals numerous, in many rows, arising outside the disk. Stamens indefinite, in several rows, arising from within the petals: filaments petaloid: anthers adnate, introrse. Torus a fleshy elevated disk, excessively enlarged, enclosing the numerous separate ovaries in hollows of its substance. Nuts numerous, loose and half buried in hollows of the disk, 1- (rarely 2-) seeded, crowned with the style. Seed suspended, orthotropous, destitute of albumen. Embryo large, with 2 fleshy cotyledons and a highly developed plumule, consisting of a pair of primordial leaves and a bud, enclosed in the persistent membrane of the nucule.—Herbs, growing in deep water, with large emersed centrally peltate fleshy leaves, and 1-flowered peduncles arising from a prostrate rhizoma. Flowers very large. Juice milky.

1. NELUMBIUM. *Juss.; Willd. sp.* 2. *p.* 1258.

Nelumbo, *Adans.*

Character same as of the Order.

1. *N. luteum* (Willd.): anthers produced into a linear appendage.—*DC. prodr.* 1. *p.* 113; *Turpin, in ann. mus.* 7. *p.* 210. *t.* 11. Nymphæa Nelumbo, *Walt. Car. p.* 155. Cyamus flavicomus, *Salisb. ann. bot.* 2. *p.* 45; *Pursh, fl.* 2. *p.* 398. Cyamus luteus, *Nutt. gen.* 2. *p.* 5. Nelumbium codophyllum, *Raf. fl. Ludov.?*
In ponds and lakes throughout the Southern and Western States! rare in the Middle and Eastern. Big Sodus Bay, Lake Ontario, *Dr. Sartwell!* Haddam, Connecticut, *Prof. Hitchcock!* Philadelphia! June.—Leaves orbicular, 1-2 feet in diameter. Peduncles slightly muricate, emersed. Flowers pale yellow.—*N. pentapetalum*, Willd. (Nymphæa pentapetala, *Walt.* "Corolla 5-petala, alba.") rests wholly on the authority of Walter, and is probably not distinct.—The tubers, which, according to Nuttall, "resemble those of the Sweet-Potato and are connected by running roots, are when boiled as farinaceous and agreeable as the potato, and are employed for food by the Osage and other western Indians." *Nutt. coll. fl. Arkans. in trans. am. phil. soc.* 2. *ser.* 5. *p.* 160.

ORDER X. NYMPHÆACEÆ. *Salisb.* (in part.)

Sepals and petals numerous, imbricated, passing gradually into each other, the former persistent, the latter inserted upon the disk which surrounds the pistil. Stamens indefinite, in several rows, inserted into the disk: filaments petaloid: anthers adnate, introrse. Torus a fleshy disk surrounding the ovary more or less. Ovary many-celled, many-seeded: stigmas radiate. Fruit many-celled, indehiscent. Seeds very numerous, covering the spongy dissepiments, or rather placentæ, and enveloped in a gelatinous aril, anatropous. Albumen farinaceous. Embryo minute, next the hilum, inclosed in the membranous sac of the nucule: cotyledons foliaceous.—Herbs with peltate or cordate fleshy leaves, and 1-flowered peduncles, arising from a prostrate trunk: aquatic. Flowers large, white or yellow.

1. NYMPHÆA. *Tourn.; DC. syst.* 2. *p.* 49.

Sepals 4, at the base of the torus. Petals and stamens passing insensibly into each other, attached to the torus which surrounds the ovary.—Flowers white or rose-color.—*White Water-Lily.*

1. *N. odorata* (Ait.): leaves orbicular or somewhat reniform, with the primary veins numerous and prominent beneath; stigma 16–20-rayed; rays incurved.
α. sinus and lobes of the leaf more or less acute.—N. odorata, *Ait. Kew.; Willd. hort. Berol.* 1. *t.* 39; *Pursh, fl.* 2. *p.* 368; *DC. syst.* 2. *p.* 57; *Hook. fl. Bor.-Am.* 1. *p.* 32. N. alba, *Michx.! fl.* 1. *p.* 311.
β. sinus and lobes more or less rounded.—N. reniformis, *Walt. Car. p.* 155; *DC. syst. l. c.; Deless. ic.* 2. *t.* 5. Nelumbium reniforme, *Willd. sp.* 2. *p.* 1260.
γ. smaller; leaves and peduncles purplish; flowers rose-color.—N. odorata β. rosea, *Pursh, l. c.* N. odorata β. minor, *Bot. mag. t.* 1652. N. minor, *DC. l. c.*
In deep and in shallow water, throughout N. America east of the Rocky Mountains! June–Sept.—Rhizoma very large. Leaves floating; sinus reaching to the centre. Flower fragrant, closing in the afternoon.—N. alba is said by Nuttall to grow in the neighbourhood of Detroit.

2. NUPHAR. *Smith; DC. syst.* 2. *p.* 59.

Sepals 5–6, petaloid, inserted at the base of the torus. Petals numerous, inserted with the sepals, very much smaller, nectariferous on the back. Stamens inserted with the petals.—Flowers yellow.—*Yellow Pond-Lily.*

1. *N. lutea* (Smith): sepals 5; stigma entire, 16–20-rayed, deeply umbilicate; leaves cordate-oval, with approximate lobes; petioles triquetrous. *DC.—Ait. Kew.* (*ed.* 2.) 3. *p.* 295; *Pursh, fl.* 2. *p.* 369; *Hook. fl. Bor.-Am.*

1. *p.* 32; *Bongard, veg. Sitcha, l. c. p.* 124. Nymphæa lutea, *Linn.; Michx.! fl.* 1. *p.* 311.

β. Kalmiana: stigma 8–14-rayed, somewhat crenate.—N. Kalmiana, *Pursh, l. c.; Hook. l. c.* Nymphæa lutea *β.* Kalmiana, *Michx.! fl.* 1. *p.* 311. N. Kalmiana, *Bot. mag. t.* 1243.

Subarctic America, *Dr. Richardson.* Sitcha, *Bongard. β.* Northern States! and Canada!—Leaves floating. *β.* is usually a much smaller plant, but is sometimes nearly as large as the succeeding species: the sinus of the leaf is commonly open.

2. *N. advena* (Ait.): sepals mostly six, the outer ones smallest; stigma slightly umbilicate and repand, 12–25-rayed; leaves cordate with the lobes diverging; petioles semi-terete.—*Pursh, fl.* 2. *p.* 369; *Ell. sk.* 2. *p.* 8; *Hook. l. c.* Nymphæa advena, *Michx.! fl.* 1. *p.* 311; *Willd. hort. Berol.* 1. *t.* 37. N. lutea, *Walt. Car. p.* 154.

β. tomentosa: leaves canescently tomentose beneath.—N. tomentosa, *Nutt. herb.!*

Canada to Georgia! and Arkansas; west to Oregon! *β.* near Philadelphia!—Leaves floating in deep water, erect and emersed in shallow. Sepals roughish, the outer ones green.—Perhaps not specifically distinct from the preceding.

wrong (Engelm.)

3. *N. sagittæfolia* (Pursh): sepals 6; petals none; anthers subsessile; leaves oblong-lanceolate, sagittate, obtuse.—*Pursh, fl.* 2. *p.* 370; *Ell. sk.* 2. *p.* 9; *DC. syst.* 2. *p.* 62; *Nutt. gen.* 2. *p.* 13. Nymphæa sagittæfolia, *Walt. Car. p.* 154. N. longifolia, *Michx.! fl.* 1. *p.* 312.

N. Carolina! to Georgia!—Rhizoma erect. (*DC.*) Leaves membranaceous, often a foot long. Outer sepals green; the inner petaloid, narrowed at the base. Flowers the size of N. lutea.

ORDER XI. SARRACENIACEÆ. *De la Pylaie.*

Sepals 5, persistent, with a small 3-leaved involucre on the outside: æstivation imbricated. Petals 5, hypogynous, unguiculate, concave. Stamens indefinite, hypogynous: anthers oblong, adnate, introrse. Ovary 5-celled, with the placentæ in the axis: style single: stigma persistent, petaloid, peltate, with 5 angles. Capsule 5-celled, 5-valved; dehiscence loculicidal: placentæ projecting into the cells, many-seeded. Seeds anatropous, minute. Embryo minute, cylindrical, placed near the hilum: albumen copious.—Herbaceous perennial plants, living in bogs. Roots fibrous. Leaves (purplish or yellowish-green) radical, with the petiole tubular or pitcher-shaped; the lamina small, rounded, and usually inflected over the orifice of the petiole. Scape 1-flowered: flower large, nodding, yellow or purple.

Of the six species known, five are confined to the Southern States east of the Alleghany Mountains, and the sixth is found as far north as Newfoundland.

1. SARRACENIA. *Linn.; Nutt. gen.* 2. *p.* 10; *Croom, in ann. lyc. New-York*, 4. *p.* 98.

Character same as of the Order.

1. *S. purpurea* (Linn.): leaves short, ascending, arcuate; tube inflated, gibbous, with a very broad wing; lamina erect, cordate, hairy within; flower purple.—*Bot. mag. t.* 849; *Michx.! fl.* 1. *p.* 310; *Ell. sk.* 2. *p.* 9; *Hook. fl. Bor.-Am.* 1. *p.* 33; *De la Pylaie, in ann. Linn. soc. Par.* 6. *p.* 388. *t.* 13; *Croom! l. c. p.* 98. S. heterophylla, *Eaton, man. bot.*
Hudson's Bay to Florida! common in the northern States. May–June.—Tube usually half-filled with water and dead insects. Stipules ovate, mucronate. Petals inflected over the stigma.

2. *S. rubra* (*Walt.*): leaves elongated and slender, erect; tube slightly dilated upwards, with a narrow linear wing; lamina erect, mucronate, narrowed at the base; flower reddish-purple.—*Walt. Car. p.* 152; *Ell. sk.* 2. *p.* 10; *Hook. exot. fl. t.* 13. & *in bot. mag. t.* 3515; *Croom! l. c. p.* 99.
N. Carolina! to Georgia! May.—Leaves 10–15 inches long; the throat open. Flowers smaller than in S. purpurea: petals obovate.

3. *S. Drummondii* (Croom): leaves very long, erect; tube dilated above, with a very narrow wing; the upper portion, as well as the orbicular erect lamina, whitish and strongly reticulated with purple veins; flower purple.—*Croom! l. c. p.* 100. *t.* 6.
Florida near Apalachicola, *Drummond! & Dr. Chapman!* and on the Apalachicola river near Ocheesee, *Dr. Chapman!* April.—Leaves 20–30 inches long, trumpet-shaped, broad at the mouth. Lamina clothed with strong hairs within. Flower large.

4. *S. psittacina* (Michx.): leaves short, reclined, marked with white spots; tube inflated, with a very broad semi-obovate wing; lamina ventricose, recurved so as nearly to close the tube; flower purple.—*Michx.! fl.* 1. *p.* 311; *Pursh, fl.* 2. *p.* 368 (excl. syn. *Walt.*); *Croom! l. c. p.* 101. S. calceolata, *Nutt.! in trans. Am. phil. soc.* (2. *ser.*) 4. *p.* 49. *t.* 1. S. pulchella, *Croom, in Sill. jour.* 25. *p.* 75.
Georgia! Florida! and Louisiana! March–April.—Leaves 3–4 inches long: tube narrow; orifice small.

5. *S. variolaris* (Michx.): leaves elongated, nearly erect; tube slightly inflated above, spotted on the back, with a linear-lanceolate wing; lamina incurved and fornicate; flower yellow.—*Michx.! fl.* 1. *p.* 310; *Bot. mag. t.* 1710; *Ell. sk.* 2. *p.* 12; *Croom! l. c. p.* 102. S. minor, *Walt.?* S. adunca, *Smith, exot. bot. t.* 53.
Pine-barren ponds, S. Carolina! Georgia! and Florida! March–April.—Leaves 12–18 inches long, with white diaphanous spots. Flowers the size of S. purpurea: petals inflected over the stigma.

6. *S. flava* (Linn.): leaves erect, very long; tube trumpet-shaped with an expanded throat; wing almost none; lamina erect, much contracted at the base, the sides reflexed; flower yellow.—*Walt. Car. p.* 153; *Michx.! fl.* 1. *p.* 310; *Bot. mag. t.* 780; *Ell. sk.* 2. *p.* 10; *Croom, l. c. p.* 103; *Audub. birds of Amer. t.* 300. S. Catesbæi, *Ell. l. c.* (*Catesb. Car. t.* 69.)
Virginia to Florida! and Louisiana! in wet pine-woods. April.—Leaves 1–3 feet long: lamina reniform, mucronate, minutely pubescent within, more or less marked with purple veins. Flowers very large: petals obovate-spatulate, undulate: stigma 2 inches broad. Odor of the flower disagreeable.—S. Catesbæi of Elliott is this species with the purple veins more than usually

marked; as was proved by the lamented Mr. Croom, whose monograph affords a very complete account of this genus.

ORDER XII. PAPAVERACEÆ. *Juss.*

Sepals 2, or sometimes 3, imbricated in æstivation, caducous. Petals 4, placed in a cruciate manner, or sometimes 5–6, hypogynous. Stamens hypogynous, distinct, as many or twice as many as the petals, or often numerous but some multiple of the petals, sometimes in as many parcels one of which adheres to the base of each: anthers innate. Ovary composed of 2 or more united carpels (distinct in Platystemon): style short or none: stigmas when several usually stellate upon the flat apex of the ovary. Fruit 1-celled, either pod-shaped with 2–3, or capsular with several parietal placentæ, which are alternate with (in Papaver opposite) the stigmas; the valves often separating from the placentæ. Seeds numerous, anatropous, sometimes slightly curved. Embryo minute, at the base of fleshy and oily albumen.—Herbs (very rarely shrubs), with commonly a milky or colored narcotic, and often acrid, juice. Leaves alternate, exstipulate, often more or less divided. Flowers solitary on long peduncles, white, yellow, or red, never blue.

1. *True Papaveraceæ.*

1. PAPAVER. *Linn.; Gærtn. fr. t.* 60.

Sepals 2. Petals 4. Stamens numerous. Style none: stigmas 4–20, sessile, radiating on the summit of the ovary. Capsule obovate, thick, opening under the crown formed by the stigmas: placentæ many-seeded, opposite to the stigmas! and extending into the cavity so as to form incomplete partitions.—Herbs with a white narcotic juice. Peduncles drooping at the extremity before flowering.—*Poppy.*

1. *P. nudicaule* (Linn.): hairy; leaves pinnatifid, with acute incised lobes; peduncles radical, very long; sepals clothed with bristly hairs; capsules hispid, obovate-oblong.—*Bot. mag. t.* 1663; *Pursh, fl.* 2. *p.* 365; *DC. prodr.* 1. *p.* 117; *Hook.! fl. Bor.-Am.* 1. *p.* 34.
Labrador! and Arctic America! Unalaschka, *Chamisso.*—♃ Flowers mostly yellow.

2. *P. dubium* (Linn.): caulescent: stem hispid with spreading hairs; leaves pinnately parted; segments incised; peduncles clothed with appressed bristly hairs; sepals hairy; capsules obovoid-oblong, smooth.—*Eng. bot. t.* 644; *DC. l. c; Darlingt. fl. Cest. ed.* 2. *p.* 317.
In cultivated grounds; becoming naturalized in Chester County, Pennsylvania, *Darlington.*—① Flowers pale red or scarlet.

3. *P. somniferum* (Linn.): caulescent, glabrous and glaucous; leaves clasping, incised and toothed, the teeth somewhat obtuse; sepals glabrous; capsules obovate or globose, glabrous.—*DC. prodr.* 1. *p.* 119.

Growing wild occasionally in waste grounds, but scarcely naturalized.—① *Common Poppy.*

2. ARGEMONE. *Linn.*; *Gærtn. fr. t.* 60; *Lam. ill. t.* 452.

Sepals 2. Petals 4–8. Stamens numerous. Stigmas 4–7, almost sessile, radiating, concave, free, alternate with the placentæ. Capsule obovate, opening at the apex by valves, which separate from the persistent filiform placentæ. Seeds globose, pitted and reticulated.—Annual glaucous herbs, with a yellow juice. Leaves sessile, repand-sinuate or pinnatifid, with prickly teeth. Peduncles erect before and after flowering.

1. *A. Mexicana* (Linn.): leaves usually blotched with white; flowers solitary; calyx glabrous, prickly; petals yellow; capsules prickly.—*Bot. mag. t.* 243; *Pursh, fl.* 2. *p.* 366; *Ell. sk.* 2. *p.* 13; *DC. prodr.* 1. *p.* 120.
β. flowers ochroleucous.
γ. flowers larger, white.—A. Mexicana *β.* albiflora, *DC. l. c.; Bot. mag. t.* 2342. A. alba, *Raf. fl. Ludov.* A. Georgiana, *Croom! in Sill. jour.* 25. *p.* 75.
δ. capsules not prickly.
In waste and cultivated places throughout the Southern and Western States. West to the Platte and Canadian Rivers! Native? *δ.* Key West! Sparingly naturalized in the Northern States. June–Oct.—*Prickly Poppy.*

3. MECONOPSIS. *Viguier, diss. p.* 20; *DC. syst.* 2. *p.* 86.

Sepals 2. Petals 4. Stamens numerous. Style short but distinct: stigmas 4–6, radiating, convex, free. Capsule obovate, opening by valves at the apex: placentæ (opposite to the stigmas?) slender, scarcely extending into the cell.—Perennial herbs with a yellow juice. The first section is very near Papaver; the second is somewhat allied to Argemone.

§ 1. *Capsules* 5–6-[*sometimes* 4-] *valved, smooth.*—MECONOPSIS, DC.

1. *M. heterophylla* (Benth.): leaves few and remote, pinnately divided; segments of the lower ones ovate, incised and petioluled; of the upper linear, entire, somewhat confluent. *Benth. in hort. trans.* (*ser.* 2.) 1. *p.* 40.
California, *Douglas*, *Nuttall!*—A foot high. Flowers small, scarlet. Petals unequal. *Nutt.*

2. *M. crassifolia* (Benth.): stem leafy at the base; leaves rather thick, glaucous, pinnately divided; the segments incisely lobed, with revolute margins; those of the lower leaves ovate-cuneiform, of the upper linear-cuneiform. *Benth.! l. c.*
California, *Douglas!*—Flowers orange-red.

§ 2. *Capsules* 4-*valved, echinate-setose.*—STYLOPHORUM, Nutt.

3. *M. diphylla* (*DC.*): leaves pinnately divided or parted; segments 5–7, obovate-oblong, sinuate, glaucous beneath; cauline leaves mostly 2, opposite; peduncles aggregated, terminal.—*DC. syst.* 2. *p.* 88, & *prodr.* 1. *p.* 121. M. petiolata, *DC. l. c.* Chelidonium diphyllum, *Michx.! fl.* 1. *p.* 309. Stylophorum diphyllum, *Nutt.! gen.* 2. *p.* 7. S. petiolatum, *Nutt.! l. c.* S. Ohioense, *Spreng. syst.* 2. *p.* 570.

Shady woods, Western States! May–July.—Sparsely pubescent when young, at length glabrous. Upper segments of the leaves confluent; the lower pair distinct. Flower bright yellow, an inch or more in diameter. Capsule ovoid.—The floral leaves are, we believe, always petioled; the petioles sometimes longer than the leaves, sometimes shorter. The erroneous character "foliis sessilibus" of Michaux has caused the introduction of a nominal species.

4. SANGUINARIA. *Linn.; Lam. ill. t.* 449; *Nutt. gen.* 2. *p.* 9.

Sepals 2. Petals 8–12. Stamens 24. Stigmas 2, connate. Capsule oblong and almost pod-shaped, acute at each end, 2-valved; valves separating from the persistent filiform placentæ. Seeds numerous, obovate, with a cristate raphe.—An acaulescent herb, with an acrid orange-colored juice, and a large creeping rhizoma. Leaves reniform, palmately 5–7-lobed; the lobes mostly sinuate, crenate, or repand. Scapes 1-flowered, each accompanied by a single leaf. Flower rather large, white.*—*Blood-Root. Red-root.*

S. Canadensis (Linn.)—*Michx.! fl.* 1. *p.* 309; *Bot. mag. t.* 162; *Nutt.! l. c.; DC. prodr.* 1. *p.* 131; *Bigel. med. bot.* 1. *p.* 75. *t.* 7; *Hook. fl. Bor.-Am.* 1. *p.* 35. S. grandiflora, *Bosc; Brit. fl. gard.* (2. *ser.*) *t.* 147.
Open woods, in light soil, &c. Canada! to Florida; west to the Mississippi. March–April.—Scape 3–8 inches high. Petals oblong, attenuate at the base.

5. CHELIDONIUM. *Linn.; Gærtn. fr. t.* 115.

Sepals 2. Petals 4. Stamens rather numerous. Capsule pod-shaped, linear, 2-valved; valves dehiscing from the base to the apex. Seeds many, furnished with a glandular cristate raphe.—Perennial herbs, with a saffron-colored acrid juice. Flowers small, yellow.—*Celandine.*

1. *C. majus* (Linn.): peduncles many-flowered; pedicels somewhat umbellate; leaves pinnately divided, glaucous; segments ovate, crenately incised or lobed, the terminal one cuneiform-obovate; capsules torulose.—*Eng. bot. t.* 1531; *Pursh, fl.* 2. *p.* 365; *DC. prodr.* 1. *p.* 123.
In waste places. Introduced. May–Oct.—Root fusiform. Leaves large, pale-green: leaflets 5–7.

6. GLAUCIUM. *Linn.; Gærtn. fr. t.* 115.

Sepals 2. Petals 4. Stamens numerous. Capsule pod-shaped, 2-valved, 2-celled by a cellular partition. Seeds many, ovate-reniform.—Biennial glaucous herbs, with an acrid saffron-colored juice.—*Horn-Poppy.*

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* By a singular typographical error, the habit of the genus, in De Candolle's Prodromus, is made to read "Herba Boreali-Americana succo sanguineo fœta *foliis longius basi cuneatis, panicula laxiore cernua.—In Nova-Hispania.*" The latter part of the phrase belongs to Bocconia frutescens β. on the same page. The mistake is inadvertently copied in Hooker's *Flora Boreali-Americana.*

1. *G. flavum* (Crantz.): stem glabrous; cauline leaves clasping, pinnatifid; floral ones repand; pod roughened with tubercles.—"*Crantz, fl. Austr.* 2. *p.* 141"; *DC. prodr.* 1. *p.* 122. G. luteum, *Smith, Eng. bot. t.* 8; *Pursh! fl.* 2. *p.* 365.

On the coast of Virginia & Carolina, *Pursh;* & on the banks of the Potomac! Introduced. June–July.—Radical leaves large, bipinnatifid, pubescent on both sides with short hairs. Calyx bristly. Petals large, bright yellow. Capsule 6–9 inches long.

7. CHRYSEIS.[*] *Lindl. bot. reg. t.* 1677.

Eschscholzia, *Cham.; DC.* (not Elsholtzia, *Willd.*)

Torus dilated, salver-form; limb expanded. Sepals 2, cohering by their edges, forming a mitre-shaped calyx, which is separated from the torus when the petals expand. Petals 4, inserted into the throat of the torus. Stamens numerous, adhering to the claws of the petals. Stigmas linear-filiform, sessile, commonly 4, two of which are shorter and abortive (sometimes 5–7, of which 2–3 are abortive). Capsule pod-shaped, cylindrical, 10-ribbed, 10-striate, with 2 parietal placentæ opposite the smaller stigmas. Seeds globose, reticulated.—Annual glaucous herbs, with a colorless juice having the odor of muriatic acid. Leaves 2–3-pinnatifid, with linear segments. Peduncles 1-flowered. Flowers yellow, showy.

1. *C. Californica* (Lindl.): stem branching, leafy; torus obconic; calyx ovoid, with a very short abrupt acumination; petals bright yellow with an orange spot at the base.—*Lindl. l. c.* Eschscholzia Californica, *Cham.; Nees, hort. Berol. & Bonn. p.* 73. *t.* 15; *Cham. & Schlecht. in Linnæa,* 1. *p.* 554; *Lindl. bot. reg. t.* 1168; *Hook. in bot. mag. t.* 2887, *& fl. Bor.-Am.* 1. *p.* 34.

California! Oregon! & N. W. Coast. Flowers in cultivation 2 inches or more in diameter.—This species and C. crocea are now common in our gardens.

2. *C. crocea* (Lindl.): stem branching, leafy; torus funnel-form, with a much dilated limb; calyx obconic, with a long acumination; flowers orange-yellow.—*Lindl. l. c. t.* 1677. Eschscholtzia crocea, *Benth.! in hort. trans.* (2. *ser.*) 1. *p.* 407; *Brit. fl. gard.* (2. *ser.*) *t.* 299.

California, *Douglas!*—Flowers as in the preceding species (the orange color apparently not entirely constant). Stigmas sometimes 5–7! Pod 2 inches long.

3. *C. cæspitosa* (Lindl.): stems short, leafy at the base; segments of the subradical leaves linear, somewhat dilated and cuneiform; peduncles elongated, erect; torus tubular, with scarcely any limb; calyx attenuate at the apex into a long acumination.—Eschscholtzia cæspitosa, *Benth. l. c.*

California, *Douglas.*—Flowers considerably smaller than in the preceding species. *Benth.*

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[*] We follow Lindley in discarding the name Eschscholzia (or *Eschscholtzia* as it has commonly been written,) for this genus; there being an older and generally admitted genus dedicated to the father of the *Dr. Eschscholz* (or rather *Elsholtz*) who accompanied Chamisso in Romanzoff's voyage, and whom this genus commemorates.

4. *C. tenuifolia* (Lindl.): stems short, leafy at the base; segments of the subradical leaves linear-subulate; peduncles elongated, erect; torus tubular, with a very short limb; calyx rather obtuse, acuminate.—Eschscholtzia tenuifolia, *Benth.! l. c.*

California, *Douglas!*—Stature and flowers as in the preceding species. *Benth.*

5. *C. hypecoides* (Lindl.): stems elongated, branched, leafy; segments of the leaves short, linear-cuneiform; torus tubular, with scarcely any limb; calyx with a short acumination.—Eschscholtzia hypecoides, *Benth.! l. c.*

California, *Douglas!*—A small and slender plant. Flowers not one-third as large as in C. Californica. Resembles Hypecoum grandiflorum. *Benth.*

.8 DENDROMECON. *Benth. in hort. trans.* (*ser.* 2.) 1. *p.* 407.

Sepals 2. Petals 4. Stamens numerous: filaments filiform: anthers linear. Stigmas 2, short and rather thick, sessile. Capsule pod-shaped, furrowed, attenuate at the summit; valves thick and coriaceous or almost woody, dehiscing from the base to the apex: placentæ filiform. Seeds rather large and numerous, pyriform, smooth.—A branching glabrous shrub! (the juice not milky; taste astringent and slightly acid, *Nutt.*) Leaves rigid and coriaceous, articulated with the stem, lanceolate or oblong, cuspidate-acuminate, strongly reticulated, denticulate on the margin. Peduncles axillary, 1-flowered. Flowers large, yellow.

D. rigidum (Benth.! l. c.)—*Hook. ic. t.* 37.

Monterey, California, *Douglas!* On the summits of mountains near St. Barbara, *Nuttall!*

9. MECONELLA. *Nutt. mss.*

" Sepals 3, somewhat pilose. Petals 5–6. Stamens 4–6: filaments membranaceous, dilated upwards: anthers very short, the cells disjoined. Stigmas 3 (rarely 4), linear, very short, sessile. Capsule pod-shaped, slender, 3- (rarely 4-) valved: valves flat, 1-nerved, dehiscing from the apex to the base, not separating from the placentæ. Seeds numerous, smooth and shining, subglobose.—A very small, annual, glabrous and somewhat glaucous herb. Stems slender, dichotomously branched. Radical leaves in a rosulate cluster, spatulate; cauline ones linear or linear-spatulate, opposite; the lowermost ternate, entire. Peduncles axillary, filiform, 1-flowered. Flower very small, ochroleucous."

M. Oregana (Nutt.! mss.)

"Open plains of the Oregon near its confluence with the Wahlamet. May.—Plant 3–5 inches high. Cauline leaves small. Peduncles 1–3 inches long. Flowers 2–3 lines wide. Petals oblong-cuneiform, yellow at the base. Capsules linear, 6–10 lines long. Evidently related to Platystigma." *Nutt.* —This interesting but humble plant seems to stand between Platystemon and Hypecoum, two genera (which notwithstanding their anomalies ought not to be removed from the family,) having apparently little relationship: it agrees with the latter in its definite stamens, and with the former in the foliage and floral envelopes, dilated filaments, &c. The torus is somewhat like that of Chryseis on a very small scale.

10. PLATYSTIGMA. *Benth. in hort. trans. l. c. p.* 407; *Hook. ic. t.* 38.

Sepals 2–3, pilose. Petals 4–6. Stamens numerous: filaments filiform (*Benth. Hook.*) [dilated and membranaceous, acute at the apex]: anthers linear. Stigmas 3, sessile, oval, somewhat spreading. Capsule ovoid-oblong, attenuate at the base, 3-valved; valves dehiscing from the apex to the base: placentæ filiform. Seeds smooth and shining (roundish kidney-shaped, *Hook.*).—A small cæspitose annual herb, with the stem abbreviated or almost none, and mostly radical and crowded, linear, entire, glabrous or slightly hairy leaves. Peduncles radical or nearly so, numerous, slender, 1-flowered, clothed with spreading hairs. Flowers pale yellow, nodding before expansion.

P. lineare (Benth.! l. c.)—*Hook.! ic. l. c.; Fisch. & Meyer, ind. sem. St. Petersb.* (*Dec.* 1835) *p.* 47; *Lindl. bot. reg. t.* 1954.
Monterey, California, *Douglas!*—Scapes a span high. Flowers nearly as large as in Ranunculus acris: petals obovate.—There is a genus Platystigma of R. Brown: but we have not the means of ascertaining which has the priority.—The filaments in our specimen are manifestly dilated, and linear-oblong or lanceolate instead of filiform. The same thing is remarked by Fischer & Meyer, who examined the living plant raised from seeds sent from the Russian settlement in California. The 3 outer petals, according to these botanists, are golden yellow with a transverse white band; the inner ones white with pale yellow claws.

2. *Papaveraceæ Ranunculineæ.*

11. PLATYSTEMON. *Benth. in hort. trans. l. c. p.* 405.

Sepals 3, pilose. Petals 6. Stamens numerous: filaments dilated, membranaceous, oblong or obcordate: anthers linear. Ovaries 10–14, distinct! oblong-linear, crowned with a linear sessile stigma. Fruit consisting of 10–14 distinct, linear, indehiscent, torulose carpels, which are articulated or transversely strangulated between each seed.—A small pale-green annual herb (destitute of colored juice, *Nutt.*), sparsely clothed with shaggy spreading hairs. Leaves half-clasping, oblong-linear, obtuse, entire, alternate, often crowded so as to appear opposite or whorled at the origin of the branches and peduncles, 3–5-nerved. Peduncles axillary, elongated, 1-flowered. Flower ochroleucous.

P. Californicum (Benth.! l. c.)—*Lindl. bot. reg. t.* 1679; *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 394; *Hook. bot. mag. t.* 3579.
α. stem somewhat elongated, nearly glabrous; leaves linear-oblong, very obtuse; carpels pilose-hispid.
β. lineare: stem abbreviated; leaves narrowly linear, 1–3-nerved.
γ. leiocarpum: carpels glabrous.—P. leiocarpum, *Fisch. & Meyer. ind. sem. St. Petersb.* (*Dec.* 1835) *p.* 47.
California, *Douglas! Nuttall!*—Plant 8–12 inches high. Leaves 1–2 inches long, with scattering hairs on the nerves and margins. Flower 10–12 lines in diameter when expanded: petals obovate, sometimes orange-yellow

at the base. Carpels appressed, (at first united, at length separating, *Hook.*) 6–8 lines long: stigmas persistent, 2–3 lines long. Torus somewhat dilated.—P. leiocarpum, *Fisch. & Meyer*, is nothing more than an accidental variety; the carpels in some of Mr. Nuttall's specimens being perfectly glabrous, in others with a few hairs.—This anomalous genus is almost exactly intermediate between Papaveraceæ and Ranunculaceæ.

ORDER XIII. FUMARIACEÆ. *DC.*

Sepals 2, small, deciduous. Petals 4, hypogynous, cruciate; one or both of the two outer ones saccate or spurred at the base; the inner pair cohering at the callous apex, and enclosing the anthers and stigma. Stamens 6, hypogynous: filaments in two parcels, placed opposite the outer petals, dilated, distinct or usually diadelphous: anthers adnate, extrorse; the middle one of each parcel 2-celled; the lateral ones 1-celled. Ovary composed of 2 united carpels, 1-celled, with 2 parietal placentæ: style filiform: stigmas united, often lobed or cuspidate, alternate with the inner petals. Fruit either an indehiscent 1–2-seeded nut, or a 2-valved many-seeded pod-shaped capsule; the valves at length often separating from the persistent filiform placentæ. Seeds anatropous or partly campulitropous, shining, arilled: albumen fleshy. Embryo in the genera with indehiscent fruit minute and excentric, in the others longer and more or less curved or circinate.—Annual or perennial glabrous and often glaucous herbs, with a watery juice. Leaves alternate, ternately or pinnately divided, exstipulate. Flowers racemose or cymose, purple, white, or yellow.

The two lateral stamens of each parcel, having unilocular anthers, may be considered as half-stamens, formed by the division of the two stamens which correspond to the inner petals: the true number in the order, according to this view, being four, one to each petal.—Lindley is inclined to regard the sepals as bracts, and the outer petals as sepals: but their analogy with Papaveraceæ (from which Lindley, following Bernhardi, distinguishes them only as a suborder) does not favor this view.

✗ 1. DIELYTRA. *Borkhausen; Hook.* (Diclytra, *DC.*)

[illegible] 1857.

Exterior petals equally saccate or spurred at the base. Capsule pod-shaped, many-seeded.—Perennial herbs. Flowers (mostly) on scapes: racemes simple, the pedicels furnished with a pair of opposite bracteoles; or compound, with the divisions cymose.

The centrifugal developement of the branches of the inflorescence in D. formosa, &c. is indicated by the bibracteolate pedicels of D. Cucullaria and Canadensis.

1. *D. Cucullaria* (DC.): spurs divaricate, straight and rather acute; wing of the inner petals short; raceme simple, 4–10-flowered.—*DC. syst.* 2. *p.* 118; *Hook. fl. Bor.-Am.* 1. *p.* 35. D. Canadensis, *Borkh.* fide *DC.* Fumaria Cucullaria, *Linn.; Michx.! fl.* 2. *p.* 51; *Bot. mag. t.* 1127. Cory-

dalis Cucullaria, *Pers. syn.* 2. *p.* 269; *Pursh! fl.* 2. *p.* 462. Cucullaria bulbosa, *Raf. in Desv. jour. bot.* 2. *p.* 159.

Shady woods, Canada! to Kentucky! and N. W. America. April.—Rhizoma not creeping, bulbiferous; the scales (which are the persistent and thickened bases of petioles, filled with fecula,) small, triangular, reddish when exposed to the air, white when subterranean. Leaves commonly 2 to each stem, on long petioles, glaucous beneath, triternately decompound; the primary and secondary divisions petiolulate; ultimate ones laciniately pinnatifid; the lobes oblong-linear, obtuse or somewhat acute, mucronulate. Scape 6–10 inches high. Flowers somewhat secund, nodding, white or cream-color, yellow at the summit. Bracts and bracteoles minute, white. Inner petals carinate; the carina not projecting beyond the summit. Filaments distinct; the middle one with a subulate process projecting into the cavity of the spur. Stigma compressed, reniform, obtusely 4-lobed. Capsule 15–20-seeded.

2. *D. Canadensis* (DC.): spurs short, rounded; wing of the inner petals projecting beyond the summit; raceme simple, 4–6 flowered.—*DC. prodr.* 1. *p.* 126. Corydalis Canadensis, *Goldie, in Edinb. phil. jour.* 6. *p.* 330; *Thomas, in Sill. jour.* 26. *p.* 114. Diclytra eximia, *Beck! bot. p.* 23. D. eximia *β. Hook. fl. Bor.-Am.* 1. *p.* 35.

Rocky woods, in rich soil, Canada! to New-York! and west to Kentucky! April.—Subterranean stems creeping, sparsely tuberiferous; the tubers roundish, bright yellow, and about as large as a grain of Indian corn (—hence the popular name, *Squirrel-corn*), each marked with the cicatrix of the fallen petiole. Leaves resembling those of D. Cucullaria, but with narrower lobes; commonly but one to each scape. Petioles terete. Scape 4–6 inches high. Corolla cordate-ovate, greenish-white, tinged with purple. Spurs rounded and slightly incurved. Flowers fragrant.—Pursh has confounded this species with his Corydalis formosa.

3. *D. formosa* (DC.): spurs short, obtuse, somewhat incurved; wings of the inner petals projecting beyond the summit; raceme compound, the branches cymulose; stigma 2-horned at the apex; leaves numerous.—*DC. syst.* 2. *p.* 109 (in part); *Ell. sk.* 2. *p.* 177; *Thomas, in Sill. jour. l. c.* D. eximia, *DC. l. c.* Fumaria formosa, *Andr. bot. rep. t.* 393; *Sims, bot. mag. t.* 1155. F. eximia, *Ker, bot. reg. t.* 50. Corydalis formosa, *Pursh! fl.* 2. *p.* 462. (excl. Canad. var.)

Clefts of rocks, on the mountains of Virginia and North Carolina, *Pursh! Nuttall! Le Conte!* June–Sept.—Rhizoma scaly-bulbiferous. Leaves 3–8 or more, rising from the crown of the rhizoma; petioles channelled, dilated at the base; divisions of the lamina variable in size and width, but mostly oblong and incisely pinnatifid. Scape 8–12 inches high; cymules several-flowered, with conspicuous crowded purplish bracts. Flowers pendulous, reddish-purple, oblong. Exterior petals attenuate upwards; lamina somewhat spreading: wings of the inner petals projecting beyond the summit in the form of 2 oblong lobes. Filaments free at the base, united above. Stigma 2 lobed, with 2 slender approximate horns between the lobes.—A beautiful species, often cultivated, and flowering throughout the season.

4. *D. saccata* (Nutt.! mss.): "spurs short, very obtuse, saccate; wings of the inner petals scarcely projecting; raceme somewhat compound, few-flowered; stigma triangular, entire; leaves numerous; rhizoma creeping." —D. formosa & D. eximia, *Hook. fl. Bor.-Am.* 1. *p.* 352.

"Shady woods of the Oregon.—Leaves several from each rootstock, somewhat glaucous; segments cuneate-obovate, incised, very acute. Scape about a foot high. Raceme about 4-flowered: bracts linear-lanceolate and acuminate. Sepals ovate, acute, appressed. Flowers broadly ovate, approximated at the summit of the scape, remarkably ventricose, pale red." *Nutt.*—

Nearly allied to D. formosa, with which it has been confounded; but distinguished by its less compound raceme, broader flowers, shorter wings of the inner petals, and entire stigma. D. formosa appears to be confined to the mountains of the Southern States.

5. *D. lachenaliæfolia* (DC.): spur very short and obtuse; scape 3–4-flowered; pedicels longer than the calyx; leaves many-cleft, with linear very acute lobes. *DC. syst.* 2. *p.* 111; *Hook. fl. Bor.-Am.* 1. *p.* 36. Fumaria tenuifolia, *Ledeb. in mem. acad. St. Petersb.* 5. (1815) *p.* 550; *Cham. & Schlecht. in Linnæa*, 1. *p.* 558.
Islands near the coast of extreme N. W. America, *Pallas*. Also found in Siberia and Kamtschatka.—Rhizoma fleshy, horizontal. Leaves several, on long petioles; lobes crowded, linear, attenuated at each end. Scapes several, 3–6 inches high. Flowers purple, 2–3, in a short loose raceme, the lower ones pendulous, the upper one erect. Pedicels variable in length, often 3–4 lines long (sometimes 5 lines, *Cham. & Schlecht.*). Corolla 8 lines long. *DC.*—Stigma 5-toothed. *Pallas*—We have seen no specimens of this plant. The preceding species should be compared with it.

D. tenuifolia, *DC. syst.* 2. *p.* 110. (*Corydalis tenuifolia*, Pursh) not having been found on the N. W. coast, as was supposed by Pursh, but in Kamtschatka, is omitted from our Flora; as is likewise D. bracteosa, *DC. l. c.*, another very doubtful native of N. America.

2. ADLUMIA. *Raf. in Desv. jour. bot.* 2. *p.* 169; *DC.*

Petals united into a spongy persistent monopetalous corolla, bigibbous at the base, 4-lobed at the apex. Capsule pod-shaped, linear-oblong, many-seeded.—Herbaceous, climbing by the cirrhose petioles. Flowers in supra-axillary racemose cymes.

A. cirrhosa (Raf. l. c.)—*DC. syst.* 2. *p.* 111; *Darlingt. fl. Cest. p.* 399. Corydalis fungosa, *Vent. choix. t.* 19; *Pursh ! fl.* 2. *p.* 463. Fumaria fungosa, *Willd. sp.* 3. *p.* 857. F. recta, *Michx. fl.* 2. *p.* 51.
Shady rocky places, and along streams, Canada! to N. Carolina! July–Sept.—② Stem 8–15 feet long, branching and climbing over shrubs and other plants. Leaves biternately divided; the primary divisions distant; petioles twining like tendrils; ultimate segments obovate-cuneiform, incisely 2–3-lobed, petiolulate. Flowers numerous, pedicellate, pale violet, or nearly white. Filaments united below into a tube, distinct above. Capsule included in the marcescent corolla. Seeds 4–8, reniform-globose, somewhat compressed.

3. CORYDALIS. *DC. syst.* 2. *p.* 113.

Only one of the exterior petals spurred at the base. Capsule pod-shaped, few- or many-seeded: style persistent.—Cauline leaves few or numerous. Racemes simple, terminal or opposite the leaves: pedicels ebracteolate.

§ 1. *Annual or biennial, with fibrous roots: stems branching, leafy: pods linear, many-seeded.*—Capnites, *DC.* (partly.)

1. *C. aurea* (Willd.): stem diffuse; leaves somewhat glaucous, bipinnate; ultimate segments oblong, acute; bracts lanceolate or ovate, acuminate; pods terete torulose.—*Willd. enum. p.* 740; *DC. prodr.* 1. *p.* 128;

Pursh! fl. 2. *p.* 463; *Hook.! fl. Bor.-Am.* 1. *p.* 37. C. flavula, *Raf. in Desv. jour. bot.* 2. *p.* 224; *DC. l. c.* Fumaria aurea, *Ker, bot. reg. t.* 66.

Rocky woods, Canada! to Georgia! west to Arkansas! Missouri! & the Rocky Mountains. April–Aug.—① or ② Stem 6–12 inches long. Leaves slender, finely divided. Racemes terminal, and opposite the leaves or supra-axillary, 5–15-flowered. Flowers varying in size, in shady situations and early in the season often scarcely 4 lines in length; but in open places and in mature plants nearly three-fourths of an inch long, golden yellow. Bracts often longer than the pedicels, and sometimes even extending beyond the flower. Petals distinct, spur incurved. Stigma small, with 2 spreading lobes. Pods 8–10 lines long, and a line in diameter, smooth or rarely (in specimens from Arkansas) hispid.—We have seen the pollen-tubes very distinctly in this plant, even in specimens collected many years ago.

2. *C. glauca* (Pursh): erect, very glaucous; leaves bipinnate; ultimate segments cuneiform, somewhat 3-lobed; racemes often clustered; bracts linear, shorter than the pedicels; pods scarcely torulose.—*Pursh, fl.* 2. *p.* 463; *DC. prodr.* 1. *p.* 128; *Hook.! fl. Bor.-Am.* 1. *p.* 37. Fumaria sempervirens, *Linn.; Michx. fl.* 2. *p.* 51. F. glauca, *Bot. mag. t.* 179.

Rocky places, Canada! to N. Carolina! May–July.—① or ② Stem 1–2 feet high, much branching. Raceme short, 6–10-flowered. Sepals purple. Petals rose-color and yellow; the inner ones with slender claws: spur short, rounded. Stigma with small somewhat spreading lobes. Pods 1½ inch long; the valves at length separating from the persistent placentæ.

§ 2. *Perennial: stem simple, rising from a large and thickened almost ligneous root (rhizoma?): cauline leaves* 1–2: "*pods ovate or elliptical, 2–4-seeded, opening elastically, the valves rolling back to the base.*—Halticosia,"[*] *Nutt. mss.*

3. *C. Scouleri* (Hook.): raceme nearly simple, shorter than the almost solitary 3–4-pinnate leaf; leaflets oval or oblong, oblique, decurrent, entire or lobed; bracts oblong, longer than the pedicels. *Hook. fl. Bor.-Am.* 1. *p.* 36. *t.* 14. C. pæoniæfolia, *Pers. syn.* 2. *p.* 269? ; *DC. l. c.?* ex *Hook.*

Deep shady woods, N. W. America: plentiful near the confluence of the Oregon with the sea, *Dr. Scouler*—Root tortuous, scaly at the neck. Leaves very few (blackish when dry), one or more rather small radical ones; the lower cauline one very large; the upper small. Flowers rose-color, pendulous, 1–1½ inch in length, in a loose raceme: spur straight, attenuated, twice the length of the petals: pedicels strongly curved downwards after flowering. Stigma capitate, apiculate. *Hook.*—We are suspicious that both this and the succeeding species will prove to be identical with C. pæoniæfolia of Siberia and Kamtschatka, which extends, according to Chamisso, nearly to America; but the question can only be decided by comparison with the original specimens in Willdenow's herbarium. The raceme, according to Hooker, is more compound in that species than in C. Scouleri; but Chamisso remarks (*Linnæa*, 1. *p.* 563.) that the racemes in his specimens are more commonly simple.

4. *C. macrophylla* (Nutt.! mss.): "raceme simple, shorter than the biternately pinnate leaves; leaflets linear-oblong, straight; bracts linear, longer than the pedicels.

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[*] "To this section belongs C. impatiens, *DC.* and perhaps some other species." *Nutt.*

"Shady woods of the Wahlamet; particularly abundant near the falls, in the darkest places.—Plant 3–4 feet high. Root not ligneous, wholly subterranean. Cauline leaves about 2: ultimate segments longer than in the preceding species. Flowers pale red, about an inch long. Capsule oblong, about 4-seeded, deflexed, of a thick and almost cartilaginous consistence, bursting elastically with considerable force, and scattering the seeds to a distance. Stigma 2-lobed at the base, 4-toothed at the summit." *Nutt.*

§ 3. *Perennial: stem simple, from a tuberous rhizoma: cauline leaves few: pods oval or oblong.*—Capnoides, *DC.*

5. *C. pauciflora* (Pers.): cauline leaves 2–3, below the middle of the stem, ternately or biternately divided; segments obovate; bracts ovate, acute; raceme crowded, few-flowered. *DC. prodr.* 1. *p.* 127; *Pers. syn.* 2. *p.* 269; *Deless. ic.* 2. *t.* 3. *f. A; Cham. & Schlecht. in Linnæa,* 1. *p.* 560.
Island of St. Lawrence, in Behring's Straits, *Chamisso.* A native also of Altaic Siberia, from whence we have specimens.—Tuber ovate, sometimes forked or palmate. Plant about 4 inches high. Leaves nearly radical, on long petioles, the base of which sheaths the stem. Stem, or rather scape, longer than the leaves, bearing a short crowded raceme of large purple flowers. Spur incurved.

4. FUMARIA. *Linn.; DC. syst.* 2. *p.* 129.

Only one of the exterior petals spurred or gibbous at the base. Fruit a 1-seeded subglobose nut: style deciduous.—Stems branching, leafy. Leaves finely dissected. Flowers small, in dense racemes.

1. *F. officinalis* (Linn.): sepals ovate-lanceolate, acute, sharply toothed, about the length of the globose retuse nut; bracts much shorter than the pedicels of the fruit. *Arnott, in Hook. fl. Bor.-Am.* 1. *p.* 37.
β. diffuse or scandent; segments of the leaves broad, glaucous. *Arnott, l. c.* F. media, *DC. prodr.* 1. *p.* 130. F. officinalis, *Pursh, fl.* 2. *p.* 463; *Darlingt. fl. Cest. p.* 401; *Bigel. fl. Bost. ed.* 2. *p.* 262.
Fields and cultivated grounds. Introduced. May–Aug.—② Stem 8–12 inches high, branching, at first erect, at length diffuse. Flowers pale violet mixed with green and purple.

ORDER XIV. CRUCIFERÆ. *Juss.*

Sepals 4, deciduous, imbricated or very rarely valvate in æstivation; the two outer (anterior and posterior) corresponding to the stigmas, often narrower; the two inner opposite the valves of the capsule, often concave or gibbous at the base, rarely spurred. Petals 4, hypogynous, cruciate, alternate with the sepals, regular, mostly unguiculate and nearly equal, deciduous. Stamens 6, hypogynous; the two opposite the lateral sepals shorter and usually inserted somewhat lower than the others, occasionally toothed; the other four in pairs opposite the

anterior and posterior sepals, distinct or rarely connate, sometimes toothed: anthers introrse. Torus with 2 or more green glands between petals or stamens and the ovary. Ovary composed of two united carpels, with two parietal placentæ united by a membranaceous (false) dissepiment: style short or none, continuous, often persistent: stigmas 2, opposite the placentæ (anterior and posterior). Fruit (a silique or silicle) usually 2-celled, rarely 1-celled, one- or many-seeded, dehiscent by the separation of the valves from the persistent placentæ, sometimes indehiscent and either lomentaceous or nucumentaceous. Seeds campulitropous, mostly pendulous (funiculus free or sometimes adnate to the septum), attached in a single row to each side of the placentæ: albumen none. Embryo with the cotyledons variously folded on the radicle (very rarely straight!).—Herbaceous, or rarely somewhat shrubby plants, with a watery, more or less acrid or pungent, juice. Leaves alternate, often divided, exstipulate. Flowers in terminal racemes or corymbs: pedicels mostly ebracteate.

1. *Siliquosæ.*

TRIBE I. ARABIDEÆ. *DC.*

Silique dehiscent, usually elongated; valves somewhat plane: septum linear. Cotyledons plane, accumbent (o=), parallel with the septum (i. e. with their edges directed to the placentæ).

1. CHEIRANTHUS. *R. Br. in hort. Kew.* (*ed.* 2.) 4. *p.* 118; *DC. syst.* 2. *p.* 178.

Silique terete or compressed. Stigma 2-lobed or capitate. Inner sepals saccate at the base. Seeds in a single series, ovate, compressed.

1. *C. capitatus* (Dougl.): somewhat rough; leaves linear-lanceolate, entire or more or less toothed, much attenuate at the base, and, with the stem, strigosely pubescent; hairs closely appressed and 2-parted; flowers yellow (rather large), densely corymbed; siliques 3 times the length of pedicels.—*Hook. fl. Bor.-Am.* 1. *p.* 38. C. asper, *Cham. & Schecht. in Linnæa*, 1. *p.* 14. (excl. syn.)

California, *Chamisso;* Oregon, *Douglas.*—① Stem a foot or more high, acutely angled. Pedicels 5–6 lines long. Silique 15 lines long and a line in width: valves marked with a prominent nerve. Stigma capitate, indistinctly 2-lobed. *Cham.*, *Hook.*

2. *C.? Pallasii* (Pursh): leaves linear-lanceolate, repandly toothed, nearly glabrous; stem simple, terete, erect; flowers purple. *DC. prodr.* 1. *p.* 136; *Pursh, fl.* 2. *p.* 436; *Hook. fl. Bor.-Am.* 1. *p.* 38.

North West Coast. July. *Pursh* (ex herb. *Lamb.*)—② Stem covered with a closely appressed 2-parted pubescence, 7–9 inches high. Leaves minutely pubescent. Raceme oblong. Pedicels filiform. Silique somewhat terete. Stigma minute, subcapitate. *DC.*—Perhaps a Hesperis.

§ ? (an gen. ?) *Silique nearly terete, somewhat torulose; valves very abrupt or truncate at the summit: style thick: stigma capitate: seeds margined: sepals shorter than the claws of the (violet-purple) petals; the inner ones slightly gibbous at the base.*—IODANTHUS.

3. *C. hesperidoides:* glabrous; lower leaves lyrate-pinnatifid; upper ones ovate-lanceolate, attenuate at the base, unequally and sharply serrate-toothed; pedicels as long as the calyx; limb of the petals roundish-obovate.—Hesperis pinnatifida, *Michx.! fl.* 2. *p.* 31; *Nutt. gen.* 2. *p.* 69; *DC. prodr.* 1. *p.* 190.

β. limb of the petals spatulate.

Banks of rivers, western part of Pennsylvania to Kentucky (*Dr. Short!*) and Illinois, *Mr. Buckley! β.* Arkansas, *Dr. Pitcher!* May–July—♃ Stem 1–3 feet high, angular and striate, simple or branched. Leaves 2–4 inches long, thin and membranaceous; lower ones usually pinnatifid toward the base, with winged petioles; middle ones sagittate-auricled at the base.—Flowers racemose, the racemes often panicled: pedicels spreading. Sepals ovate-oblong, obtuse, tinged with purple. Siliques about an inch and a half long, narrowly linear, curved upward. Style terete, a line or more in length, in fruit thicker than the depressed-capitate stigma. Seeds roundish-oblong, with a narrow border. Cotyledons o=

2. NASTURTIUM. *R. Br. in hort. Kew.* (*ed.* 2.) 4. *p.* 109; *DC. syst.* 2. *p.* 187.

Silique nearly terete, sometimes shortened so as to resemble a silicle, usually curved upward. Stigma somewhat 2-lobed. Sepals spreading, equal at the base. Seeds small, irregularly disposed in a double series, not margined. —Aquatic or subaquatic herbs. Leaves often pinnately divided. Flowers yellow or white.

§ 1. *Petals white: siliques linear: 4 conspicuous glands at the base of the stamens.*—Cardaminum, *DC.*

1. *N. officinale* (R. Brown): leaves pinnately divided; segments ovate, subcordate, repand; petals white, longer than the calyx.—*DC. prodr.* 1. *p.* 137; *Hook. fl. Bor.-Am.* 1. *p.* 39. Sisymbrium Nasturtium, *Linn.; Pursh, fl.* 2. *p.* 440?; *Nutt. gen.* 2. *p.* 67.

Along the Wahlamet River, and in ponds, Oregon, *Nuttall;* North West Coast, *Scouler;* Southern States, "introduced," *Elliott.* New England to Virginia, *Pursh.*—Certainly introduced and scarcely naturalized in the United States.

§ 2. *Petals yellow (rarely white): siliques commonly short: glands at the base of the stamens small.*—Brachylobos, *DC.*

2. *N. tanacetifolium* (Hook. & Arn.): leaves pinnately divided; segments sinuate-pinnatifid or toothed; siliques oblong-linear, nearly erect, acute; style short.—*Hook. & Arn.! in jour. bot.* 1. *p.* 190. N. palustre *δ* tanacetifolium, *DC. prodr.* 1. *p.* 137. Sisymbrium tanacetifolium, *Walt. Car. p.* 174. S. Walteri, *Ell. sk.* 2. *p.* 146.

Damp soils, South Carolina, East Florida! Louisiana! and Arkansas! March–May.—② Stem much branched and somewhat decumbent or diffuse, 6–12 inches long. Leaves smooth, the ultimate segments obtuse. Flowers very small. Petals linear, scarcely as long as the calyx. Silique 6–8 lines long, straight or a little incurved, pointed with a short but distinct style: stigma capitate. Pedicels about one-third as long as the silique. Seeds very numerous.

3. *N. lyratum* (Nutt.! mss.): "leaves pinnatifid or lyrate; the segments oblong-lanceolate, incisely serrate or angularly toothed; silique linear, compressed, more than twice the length of the pedicel, somewhat spreading, abrupt at the apex; style very short; common peduncle flexuous."

"Banks of the Oregon," *Nuttall!*—Scarcely a foot high, glabrous. Leaves somewhat variable in the toothing and serratures. Racemes paniculate in fruit. Flowers minute. Siliques about three-fourths of an inch long, slightly curved; the valves obtuse at the summit. Style scarcely half a line long, not clavate. Pedicels 1–2 lines in length.

4. *N. sessiliflorum* (Nutt.! mss.): "leaves cuneate-obovate, obtuse, repandly toothed or nearly entire; siliques subsessile, linear-oblong, obtuse, tipped with the nearly sessile stigma."

"Banks of the Mississippi," *Nuttall;* Kentucky? *Rafinesque!*—Glabrous. Leaves 1–2 inches long; those of the stem merely toothed, or almost entire, attenuated at the base. Racemes in fruit elongated. Flowers minute. Siliques nearly half an inch long, on extremely short peduncles: valves obtuse. Style very short and thick. Cotyledons o=

5. *N. sinuatum* (Nutt.! mss.): "decumbent; leaves pinnatifid; segments lanceolate, subserrate or toothed on the lower margin; pedicels spreading or recurved, longer than the oblong acute silique; style nearly one-third the length of the silique.

"Banks of the Oregon and its tributaries; also in Arkansas.—Glabrous. Leaves all equally pinnatifid; the terminal segments more or less confluent. Flowers rather large, bright yellow. Sepals ovate. Petals oblong-ovate. Silique about one-third of an inch long, slightly curved." *Nutt.* Cotyledons o=

6. *N. curvisiliqua* (Nutt. mss.): erect, branching; leaves lanceolate, pinnatifid, acute, somewhat clasping at the base; lobes linear-lanceolate and spreading, the uppermost nearly entire; raceme in fruit elongated; siliques linear, acuminate, falcate, twice as long as the pedicels. *Hook. fl. Bor.-Am.* 1. *p.* 61. (sub Sisymb.)

North West Coast; in sandy soil, near streams. *Douglas;* on the Oregon, *Nuttall!*—① Stem about a foot high, minutely pubescent. Flowers small, corymbed. Silique smooth, about an inch long, somewhat torulose. Seeds in a double series. *Hook.*—Our specimen of this plant, from Mr. Nuttall, differs in several respects from the description of Hooker. The lobes of the leaves are ovate-lanceolate. The siliques (not quite mature) are oblong, arcuate, and rather shorter than the pedicels, which are recurved at the base, and spreading. The flowers are larger than in any of the preceding species of this section. Cotyledons o=

7. *N. palustre* (DC.): leaves pinnately lobed, clasping and ciliate at the base; lobes confluent, toothed, glabrous; root fusiform; petals as long as the sepals; silique spreading, obtuse at each end, somewhat turgid.—*DC. syst.* 2. *p.* 191; *Hook. fl. Bor.-Am.* 1. *p.* 39; *Cham. & Schlecht. in Linnæa,* 1. *p.* 15.

Wet places, Arctic America to New-Orleans! and west to Oregon! June–Aug.—♃ Stem 1–2 feet high, erect, glabrous, branching above. Leaves 2–3 inches long; lobes oblong-lanceolate. Flowers very small. Peduncles of the fruit 2–4 lines long, slender, spreading almost horizontally. Silique 3–4 lines in length, more or less ovate or ovate-oblong, slightly curved, crowned with a very short style.

8. *N. amphibium* (R. Brown): leaves oblong-lanceolate, pinnatifid or ser-

rate; root fibrous; petals longer than the calyx; silique ellipsoid, spreading, mucronate with the style. *DC. prodr.* 1. *p.* 138; *Hook. fl. Bor.-Am.* 1. *p.* 39. Sisymbrium amphibium, *Linn.; Pursh, fl.* 2. *p.* 440.

Watery places; Canada, *Hooker;* Pennsylvania to Virginia, *Pursh.*—Stems sulcate, sparingly branched. Emersed leaves serrate, often pubescent; immersed ones more or less pinnately lobed, sometimes pectinately capillaceous. Racemes dense, elongated. Peduncles spreading, at length reflexed, twice as long as the silique. Silique oblong-ovate, attenuate at the base, pointed with the short style. *DC.*—We have seen no N. American specimens that accord with the description of this plant. The N. amphibium of some of our botanists is probably only a variety of N. palustre.

9. *N. polymorphum* (Nutt.! mss.): "leaves deeply pinnatifid or almost entire; segments entire; petals scarcely longer than the calyx; silique oblong-linear, compressed; stigma minute, nearly sessile.

"Banks of the Oregon.—① or ② Stem about a span high. Leaves rather narrow; the segments short, linear, and acute. Branches from the root, after the developement of the stem and fruit, or shoots from a cropped stem, produce leaves either entire or with a few pinnatifid incisions. At other times the whole plant bears similar leaves. Flowers small." *Nutt.*

10. *N. obtusum* (Nutt.! mss.): "leaves pinnately divided, decurrent; segments irregularly oval, angularly toothed, obtuse; siliques linear, subterete, twice the length of the pedicels; style short.

"Banks of the Mississipsi.—① Stem branching above. Racemes lateral and terminal, elongated in fruit." *Nutt.*

11. *N. limosum* (Nutt.! mss.): "leaves lanceolate, laciniately pinnatifid towards the base, nearly entire above or merely angularly toothed; laciniæ decurrent, subserrate or entire; pedicels much shorter than the abbreviated siliques; stigma nearly sessile.

"Banks of the Mississippi, near New-Orleans.—② Subaquatic. Habit of N. palustre. Very smooth. Leaves irregularly but not deeply divided, except where they approach the water." *Nutt.*

12. *N. hispidum* (DC.): stem (tall) tomentose-villous; leaves somewhat villous, runcinate-pinnatifid; lobes rather obtusely toothed; siliques (minute) ovate, tumid, pointed with the distinct style, scarcely more than half as long as the somewhat spreading pedicels; petals scarcely as long as the calyx.—*DC. syst.* 2. *p.* 201. Sisymbrium hispidum, *Poir. enc.* 5. *p.* 161.

Near Middletown, Connecticut, *Dr. Barratt!* Pennsylvania, *Poiret;* Middle and Northern States, *Nuttall.*—♃ ? Stem 2–3 feet high, much branched above, almost hispidly villous, angular, erect. Leaves 3–6 inches long; lobes numerous, ovate. Racemes numerous, panicled. Flowers minute. Sepals oblong, obtuse. Petals obovate. Silique scarcely more than a line long, exactly ovate, somewhat compressed. Style nearly half the length of the fruit: stigma capitate. Pedicel 2–3 lines long.—A very distinct species, remarkable for its villous stem, and very small ovate siliques.

13. *N. sylvestre* (R. Brown): leaves pinnately divided, segments lanceolate, serrate or incised; petals longer than the calyx; siliques oblong, somewhat torulose; style very short. *DC. syst.* 2. *p.* 190. Sisymbrium sylvestre, *Linn. sp.* 916. S. vulgare, *Pers. syn.* 2. *p.* 196; *Nutt. gen.* 2. *p.* 68.

Banks of the Delaware near Philadelphia, *Nuttall.*—Introduced.

14. *N. cernuum* (Nutt.! mss.): "racemes panicled (flowers white); leaves pinnatifid or laciniate, the segments irregularly and distantly toothed; silique short, obovate, nodding; stigma sessile.

"Ponds of Wappatoo Island at the junction of the Wahlamet with the Oregon.—Stem thick and stout. Petals exserted, rather narrow. Pedicels more than twice the length of the fruit.—Allied to N. amphibium, but destitute of a style, the fruit is not elliptical, and the leaves are more divided."—*Nutt.*

15. *N. natans* (DC.): emersed leaves oblong-linear, entire; immersed ones many-parted with capillary segments; petals scarcely longer than the calyx; siliques obovate-globose. *DC. syst.* 2. *p.* 198; *Deless. ic.* 2. *t.* 15.

β. Americanum (Gray): emersed leaves serrate; petals (white) twice as long as the calyx; siliques obovate; style as long as the ovary, and half as long as the fruit.—*Gray! in ann. lyc. New-York*, 3. *p.* 223. N. natans, *Hook. fl. Bor.-Am.* 1. *p.* 39; *Beck, bot. p.* 32.

γ. brevistylum: emersed leaves oblong-lanceolate, denticulate-serrate; style much shorter than the ovary.

β. In water; Canada, *Dr. Holmes!* Oneida Lake, *Gray!* Ogdensburgh, New-York, *Dr. Crawe!* Pekin, Illinois, *Mr. Buckley!* *γ.* near New-Orleans, *Dr. Ingalls!* July.—Stem 2–5 feet long, according to the depth of the water. Submersed leaves deciduous. Flowers more than twice as large as in N. palustre. Silicle more than 2 lines in length, sometimes obovate-oblong. Style slender; stigma capitate.—It is quite possible that the American plant is distinct from the Siberian species, which we know only from the description of De Candolle and the figure of Delessert, and which is said to have yellow flowers, smaller than those of N. amphibium, and petals scarcely longer than the calyx; whereas the petals are pure white in our plant, about twice the length of the calyx, and the flowers twice as large as in Delessert's figure.

3. BARBAREA. *R. Br. in hort. Kew.* (*ed.* 2.) 4. *p.* 109; *DC. syst.* 2. *p.* 205.

Silique ancipital or 4-sided; valves concave-carinate. Seeds in a single series. Sepals equal at the base.—Leaves lyrately pinnatifid. Flowers yellow.

1. *B. vulgaris* (R. Brown): lower leaves lyrate, the terminal lobe roundish; upper ones obovate, toothed or pinnatifid at the base; silique 4-sided, with the sides somewhat convex, acuminate with the style.—*DC. prodr.* 1. *p.* 140; *Hook. fl. Bor.-Am.* 1. *p.* 39. B. arcuata, *Bong. in mem. acad. St. Petersb.* (6. *ser.*) 2. *p.* 124. Erysimum Barbarea, *Linn.*; *Cham. & Schlecht. in Linnæa*, 1. *p.* 15.

β. gracilis (DC.): stem slender, nearly simple.

Along streams and road sides; common in the Northern States! and apparently introduced. Oregon and N. W. America; Sitcha, *Bongard.* *β.* Oregon, *Nuttall.* May–June.—One to two feet high, glabrous, branching in a paniculate manner. Flowers in dense racemes.—Mr. Nuttall thinks that the var. *β.* is a distinct species, which he calls B. gracilis.

2. *B. præcox* (R. Brown): lower leaves lyrate, the terminal lobe obovate; upper ones pinnatifid, with linear-oblong lobes; siliques linear, elongated, compressed-ancipital; style very short and thick.—*DC. prodr.* 1. *p.* 141; *Hook.! fl. Bor.-Am.* 1. *p.* 39. E. præcox, *Smith.*

Banks of rivers, Canada to lat. 68°!—Stigma nearly as broad as the valve. Siliques 2–3 inches long.—Resembles the preceding, but more slender. The flowers are also smaller, and the siliques longer.

4. STREPTANTHUS. *Nutt. in jour. acad. Philad.* 5. *p.* 134.

Silique very long, compressed or somewhat quadrangular: style short or none. Seeds in a single series, flat, margined. Sepals erect, colored. Claws of the petals canaliculate, usually twisted Filaments subulate (those of each pair of the longer stamens sometimes united): anthers linear.—Annual or biennial (rarely perennial?) herbs, with purple, rarely yellowish or white flowers.

§ 1. *Limb of the petals broad: calyx slightly spreading.*

1. *S. obtusifolius* (Hook.): leaves elliptical, obtuse, deeply 2-lobed and clasping at the base; petals broadly obovate; siliques broadly linear.—*Hook. bot. mag. t.* 3317. Brassica Washitana, *Muhl. cat. p.* 63? Stanleya Washitana, *DC. syst.* 2. *p.* 512?

Hot springs of Arkansas, *Mr. Sabine.* (v. s. cult. ex hort. *Short.*)—① Whole plant smooth and glaucous. Stem tall. Leaves 4–5 inches long and 1½–3 inches broad, appearing almost perfoliate from the deep closed sinus at the base. Flowers large and very showy. Limb of the petals nearly as broad as long, fine rose-color, with a very deep purple spot in the centre. Siliques 4 inches long, pointed with the short style.

2. *S. maculatus* (Nutt.): leaves ovate-oblong, the leaves broad and clasping, entire, or minutely and remotely repand-denticulate; petals obovate (purple); siliques somewhat 4-sided.—*Nutt.! in jour. acad. Philad.* 5. *p.* 134. *t.* 7.

On rocks, Arkansas, *Nuttall;* near St. Augustine, Texas, *Dr. Leavenworth!* April-May.—① Stem 1½–2 feet high, sometimes much taller, usually simple, but often branched, glabrous and glaucous, terete. Leaves 3–6 inches long, 1½ inch broad, glaucous, rather acute. Flowers in simple or paniculate racemes, very showy. Pedicels 3–4 inches long, spreading. Calyx purplish. Petals deep purple in the middle with a velvety appearance, lighter towards the crenulate edge; claw longer than the limb. Anthers about 2 lines long, curved in drying: filament straight, as long as the anther. "Silique 4–5 inches long, erect, linear, compressed and somewhat quadrangular." *Nutt.*

3. *S. sagittatus* (Nutt.): leaves oblong, acute, sagittate and clasping, entire; petals oblong-ovate (not spotted). *Nutt.! in jour. acad. Philad.* 7. *p.* 12.

Sources of the Oregon, *Mr. Wyeth!* June.—① Smooth, branched above. Leaves smooth and apparently somewhat glaucous beneath. Raceme many-flowered. Pedicels half an inch long. Flowers lilac-red: claws of the petals very long, exserted. "Allied to S. obtusifolius, *Hook.*, but with the lower leaves entire, not "lyrate-pinnatifid." *Nutt.*

4. *S. angustifolius* (Nutt.! mss.): "radical leaves lanceolate-linear, sparingly hirsute; cauline oblong-lanceolate, sagittate and clasping, smooth, erect; petals oblong-oval (rose-color), the limb exserted.

"Rocky Mountains, towards the sources of the Platte.—② Radical leaves tufted, more or less hirsute, the hairs centrally affixed. Stems several from one root, 12–18 inches high, virgate, a little branching near the summit. Lower stem-leaves much broader than the radical ones, closely amplexicaul, becoming much smaller above; the longest scarcely an inch in length.—Flowers small, pale-red. Sepals short, smooth, almost coriaceous. Petals obtuse; the claws somewhat contorted, extending (as well as the stamens) beyond the calyx."—*Nutt.*

5. *S. virgatus* (Nutt.! mss.): radical leaves (and lower part of the stem) more or less villous with stellate hairs, lanceolate-linear; cauline ones oblong-linear, sagittate, clasping; petals exserted, linear-oblong; calyx pubescent.

"With the preceding, and greatly resembling it; but differing in the narrow petals and stellate pubescence." *Nutt.*

6. *S. arcuatus* (Nutt.! mss.): "hirsutely villous with branching hairs; leaves lanceolate-linear, remotely serrulate; cauline ones sagittate and clasping, very acute; siliques flat and curved downward; petals (purple) obovate, exserted.

"Shelving rocks, on high hills near St. Barbara, Upper California.—Stems growing in dense tufts, very rarely branched, 1–2 feet high. Calyx purplish. Petals deep reddish-purple. Anthers oblong. Siliques about 3 inches long, glabrous. Seeds in a single (or partly in a double) series, with a distinct membranaceous margin." *Nutt.*—The siliques much resemble those of Arabis Canadensis. The seeds are arranged horizontally, the radicle being superior and lying across the axis of the silique. Funiculus free. Septum opaque, marked with a broad longitudinal nerve; areolæ indistinct.

§ 2. *Petals narrow: calyx closed.*—Euklisia, Nutt. mss.

7. *S. glandulosus* (Hook.): hirsute below; leaves linear-oblong, repandly toothed, the teeth glandular; radical ones petiolate, cauline deeply sagittate and clasping; flowers erect-spreading (purple), secund; siliques very narrow, somewhat spreading, curved; valves reticulated; petals linear-lanceolate, undulate.—*Hook.! ic. t.* 40.

Monterey, Upper California, *Douglas!*—② Stem 1–2 feet high, slender, terete, the lower part scaly-hirsute. "The lowest leaves (which are often withered) pinnatifid." *Hook.* Cauline ones 1–2-inches long, acute, remotely toothed. Pedicels 2 lines long, thick. Flowers half an inch in length, dark purple. Sepals ovate. Petals more than twice as long as the calyx. Two of the longer stamens united. Silique 3 inches in length and less than a line broad, tapering at the summit into a very short style. Seed too young in our specimens to show the embryo.

8. *S. flavescens* (Hook.): hirsute with simple hairs; leaves linear-oblong, the lowest ones sinuate-pinnatifid, or obtusely dentate with glandular teeth, upper ones entire; flowers erect (yellowish); petals linear, acute; siliques (immature) erect, hirsute.—*Hook.! ic.* 1. *t.* 44.

Monterey, California, *Douglas!*—① About a foot high, erect, simple. Radical leaves nearly two inches long; cauline scarcely an inch in length. Raceme not secund. Sepals ovate, obtuse. Petals nearly twice the length of the calyx. Anthers linear-oblong. Silique pointed with a short style.

9. *S. repandus* (Nutt. mss.): "hirsute, particularly the lower part; leaves oblong-lanceolate, elongated, clasping, angularly toothed or repand above (flowers white); petals about as long as the calyx.

"St. Barbara, Upper California.—Stem simple, about 2 feet high. Pedicels shorter than the calyx. Sepals and petals linear." *Nutt.*

10. *S. heterophyllus* (Nutt.! mss.): "hirsute below with simple hairs; leaves laciniate-pinnatifid, cauline ones sagittate at the base and clasping; flowers pendulous (purple); sepals long, connivent; petals linear; siliques very long and narrow, pendulous.

"Bushy hills, near St. Diego, Upper California.—① or ② Stem 3–5 feet high, branching; the upper part glabrous. Calyx deep purple. Petals purple and whitish, undulated, of the same breadth throughout. Siliques 3–5 inches long, on pedicels 4 lines in length." *Nutt.*

11. *S. cordatus* (Nutt.! mss.): "glabrous; lower leaves spatulate-oblong, repandly denticulate; cauline ones cordate, clasping, all obtuse; flowers on short pedicels (greenish-yellow); siliques deflexed.

"Forests of the Rocky Mountains.—Apparently perennial. Leaves very obtuse, toothed near the summit; cauline ones with a deep sinus embracing the stem. Calyx oblong-campanulate. Petals a little exserted. Anthers linear, longer than the filaments." *Nutt.*

12. *S. hyacinthoides* (Hook.): glabrous; leaves oblong-linear, acuminate; petals spatulate-linear, the limb reflexed; filaments of the longer stamens united by pairs.—*Hook. in bot. mag. t.* 3516.

Texas, near San Felipe de Austin, *Drummond;* near Fort Towson, Arkansas, *Dr. Leavenworth!* June.—① Stem simple or branching, 2–3 feet high. Leaves sessile, narrow below, but clasping. Flowers deep bluish-purple. Sepals lanceolate, acuminate.

5. TURRITIS. *Dill.; DC. syst.* 2. *p.* 211.

Silique linear; valves plane. Seeds in a double series in each cell.—Flowers white or rose-color.

1. T. *glabra* (Linn.): radical leaves petioled, toothed, pubescent with spreading hairs; cauline ones ovate-lanceolate, clasping and sagittate, mostly entire, glabrous and glaucous; siliques linear, elongated, strictly erect; petals scarcely longer than the calyx.—*DC. prodr.* 1. *p.* 142; *Hook. fl. Bor.-Am.* 1. *p.* 40?

β.? leaves all linear-lanceolate and glabrous; radical ones remotely repand-denticulate; cauline entire; lobes acute.

Hudson's Bay to the Rocky Mountains. Shore of Lake Superior, *Dr. Pitcher! β.* Rocks, Watertown, New-York! May.—Stem 2 feet high, strict, terete, simple. Leaves about an inch long. Pedicels of the fruit 3–6 lines long. Siliques 2–3 inches long and scarcely half a line wide, crowned with the nearly sessile stigma. Seeds with a winged margin. Funiculi slender, about as long as the seed. (Flowers pale sulphur-color, *Hook.*)—Perhaps distinct from the European plant, of which our specimens are not sufficiently advanced for full comparison. We have not seen the fruit in *β.*, which has narrower and rather acute leaves, and may prove to be a distinct species.

2. *T. macrocarpa* (Nutt.! mss.): "radical leaves runcinate-dentate, or simply toothed, hairy; cauline ones lanceolate, sagittate, crowded, glabrous; siliques strictly erect, very long and narrow.

"Rocky situations, in the woods of Oregon.—Stem 3–4 feet high, terete, glabrous, simple. Radical leaves sparingly hirsute with stellate hairs; cauline ones crowded on the lower part of the stem. Sepals linear. Petals linear and narrow, yellowish-white. Stigma capitate, somewhat 2-lobed. Silique about 4 inches long, rigidly erect and appressed. Seeds somewhat quadrate, slightly margined." *Nutt.*—We should rather consider this a species of Arabis, as the seeds are placed mostly in a single row in the very narrow silique.

3. *T. spathulata* (Nutt. mss.): "radical leaves broadly spatulate-oval, repandly toothed, hirsute; cauline oblong-lanceolate, clasping; siliques very long, erect.

"Woods of the Oregon.—Stem 12–18 inches high, branched from near the base. Upper leaves much smaller than the lower ones. Petals narrow, a little longer than the calyx. Siliques about 3 inches long." *Nutt.*

4. *T. mollis* (Hook.): erect, hirsute with soft spreading hairs; lower leaves spatulate, sinuate-toothed; the upper ones lanceolate, sagittate at the base; siliques elongated, linear, strictly erect. *Hook. fl. Bor.-Am.* 1. *p.* 40.

Arctic America.—① A foot or more high. Flowers white, capitate-corymbed. Petals cuneiform, nearly twice as long as the calyx.—Habit of Arabis hirsuta. *Hook.*

5. *T. stricta* (Graham): erect, glabrous; leaves lanceolate; radical ones petioled, toothed; cauline ones sagittate, partly clasping, somewhat toothed; siliques linear, elongated, and (like the flowers) strictly erect. *Hook.—Graham, in Edinb. new phil. jour.* (1829) *p.* 7; *Hook. fl. Bor.-Am.* 1. *p.* 40.

Oregon, Rocky Mountains.—① Habit of the preceding, but more slender. Flowers white: petals obovate, emarginate, twice the length of the calyx. Silique 2–3 inches long, rather broadly linear; style short, much narrower than the valves: stigma minute. *Hook.*

6. *T. patula* (Graham): erect; leaves lanceolate; radical ones petioled, toothed or nearly entire, pubescent; cauline sagittate, partly clasping, glabrous (or sparingly pubescent); flowers spreading; siliques linear, elongated, much spreading.—*Graham, in Edinb. jour. l. c; Hook.! fl. Bor.-Am.* 1. *p.* 40.

Greenland and Hudson's Bay to the Rocky Mountains! and Oregon.—② Stem 12–18 inches high, simple. Leaves an inch in length; the radical and lower cauline ones stellately hirsute. Flowers rather large, purplish or rose-color. Siliques rather broadly linear, about 3 inches long, straight or a little curved; valves obtuse: stigma sessile. Seeds very distinctly 2-rowed, margined.

7. *T. retrofracta* (Hook.): erect, canescently pubescent (or nearly glabrous); leaves lanceolate; radical ones petioled, toothed; cauline sagittate, partly clasping; flowers nodding; siliques linear, elongated, and (with the pedicels) refracted. *Hook. fl. Bor.-Am.* 1. *p.* 41. Arabis retrofracta, *Graham, in Edinb. jour. l. c.*

Hudson's Bay to the Rocky Mountains; north to lat. 68°.—Flowers nearly white, or with a purplish tinge.—The (margined) seeds in a young state, are in two rows, but in the mature fruit they are in a single series. *Hook. Graham.*

8. *T. brachycarpa*: glabrous and glaucous; radical leaves spatulate, toothed; cauline ones linear-lanceolate, acute, sagittate and somewhat clasping; siliques short, rather broadly linear; pedicels of the flowers pendulous, of the fruit spreading or ascending.

Fort Gratiot, Michigan, and Shore of Lake Superior, *Dr. Pitcher!*—② Stem 1–2 feet high, simple or sparingly branched above. Radical leaves pubescent. Flowers rather large, pale purple; the pedicels mostly bent downward. Silique about an inch long and nearly a line wide, straight or somewhat curved, usually spreading at right angles to the stem. Seeds mostly abortive, in 2 distinct rows when young; the ripe and perfect ones nearly as broad as the cell, winged on the margin.—The whole plant is sometimes of a purple color. Nearly related to the preceding; but distinguished by its short siliques.

9. *T.? diffusa* (Hook.): very glabrous and glaucous; stem diffusely branched; radical leaves spatulate, nearly entire; cauline sagittate, slightly toothed; siliques linear, spreading, twice as long as the pedicels. *Hook. fl. Bor.-Am.* 1. *p.* 41.

Shores of the Arctic Sea.—Stems many from the same root, a span high. Cauline leaves about an inch long, obtuse. Flowers small. Petals half the length of the calyx, white. Silique scarcely an inch long.—Perhaps an Arabis. *Hook.*

6. ARABIS. *Linn.: DC. syst.* 2. *p.* 214.

Silique linear, plane; valves 1-nerved in the middle. Seeds in a single series in each cell, oval or orbicular, compressed.—Flowers white, rarely rose-color.

* *Seeds immarginate or slightly margined.*

1. *A. alpina* (Linn.): stem branching, somewhat diffused, and, with the leaves, clothed with a villous branched pubescence; leaves many-toothed; radical ones somewhat petioled; cauline cordate, clasping; peduncles nearly glabrous, longer than the calyx. *Hook. fl. Bor.-Am.* 1. *p.* 41; *Bot. mag. t.* 226; *Pursh, fl.* 2. *p.* 436; *DC. prodr.* 1. *p.* 142.

Labrador.—A native also of the north of Europe.

2. *A. hirsuta* (Scop.): stem erect, toothed or somewhat entire, and, with the stem, hirsute with a branched pubescence; radical ones oblong-ovate, petioled or sessile; cauline ones oblong or lanceolate, somewhat clasping, mostly auricled at the base or sagittate; siliques numerous, erect.—*DC. prodr.* 1. *p.* 144; *Hook.! fl. Bor.-Am.* 1. *p.*42; *Cham. & Schlecht. in Linnæa,* 1. *p.* 15; *Darlingt. fl. Cest. ed.* 2. *p.* 382. A. sagittata, *DC. prodr.* 1. *p.* 143. Turritis hirsuta, *Linn.* T. oblongata, *Raf.*

β. glabrata: whole plant glabrous; leaves mostly entire.

γ. ovata: radical leaves spatulate, petioled; cauline ones ovate, partly clasping, not auricled.—A. ovata, *Poir.* A. sagittata *β*. ovata, *DC. prodr. l. c.* Turritis ovata, *Pursh! fl.* 2. *p.* 438.

Rocky places, Canada! (lat. 68°) to Virginia; west to Oregon and Sitcha. *β*. Oregon, *Dr. Scouler!* *γ*. Hoboken, New Jersey!—① Stem about a foot high, often glabrous above. Flowers greenish-white. Silique straight, 1–2 inches long, scarcely half a line wide; stigma nearly sessile. Seeds with a narrow margin.

3. *A. dentata:* more or less rough with a stellate pubescence; radical leaves obovate, tapering at the base into a petiole as long as the limb, irregularly dentate with sharp salient teeth; cauline ones oblong, clasping; flowers minute; petals spatulate, scarcely longer than the calyx; siliques short, spreading, on very narrow pedicels, pointed with the nearly sessile stigma; stem branched from the base.—Sisymbrium dentatum, *Torr.! in Short's 3rd suppl. cat. pl. Kentucky.*

Sandy banks of the Ohio! Missouri! Mississippi! and Arkansas. April.—① Plant 1–2 feet high; the pubescence (particularly of the under surface of the leaves) short and rather scabrous. Stem slender, sometimes decumbent at the base. Radical leaves 2½ inches long, and three-fourths of an inch broad. Flowers scarcely 2 lines long. Sepals hirsute. Petals dusky white (with a tinge of purple, *Nutt.*). Anthers ovate-oblong. Silique an inch long, not a line in breadth; valves somewhat convex. Seeds slightly margined. Radicle long and slender, distant from the accumbent cotyledons.

4. *A. stricta* (Huds.): radical leaves oblong, attenuate at the base, lyrately pinnatifid, hispid with spreading hairs; cauline ones few, lanceolate, somewhat attenuate at the base; petals oblong, erect, obtuse, twice the length of the glabrous calyx; siliques elongated, erect. *Hook.—Pursh, fl.* 2. *p.* 437; *Hook. fl. Bor.-Am.* 1. *p.* 42.

Labrador.—♃ A native also of Europe.

5. *A. petræa* (Lam.): stem nearly erect, sometimes branched, glabrous; radical leaves petioled, incised or pinnatifid; cauline ones oblong-linear, entire; petals obovate, unguiculate; siliques erect-spreading.—*Lam. dict.* 1. *p.* 221; *DC. prodr.* 1. *p.* 145; *Hook. fl. Bor.-Am.* 1. *p.* 42 (excl. syn.); *Cham. & Schlecht. in Linnæa,* 1. *p.* 15.

On rocks; Canada to Arctic America, and N. W. Coast. Shore of Lake Superior, *Dr. Pitcher!*—♃ Stems 3–9 inches high. Cauline leaves few. Flowers white or lilac. Style very short or none.—Habit of Arabis lyrata, from which it differs in its perfectly accumbent cotyledons and perennial root.

6. *A. ambigua* (*DC*): leaves nearly glabrous, the radical ones sinuate-lyrate; middle ones oblong-oval and toothed, attenuate at the base; the uppermost linear-oblong and entire; stem nearly simple; siliques somewhat erect.—*DC. syst.* 2. *p.* 231; *Cham. & Schlecht. in Linnæa*, 1. *p.* 16; *Hook. fl. Bor.-Am.* 1. *p.* 42.

Unalaschka, Sitcha! and Kotzebue's Sound.—① Stems numerous from one root, a foot or more high, ascending. Radical leaves with a few simple hairs; cauline ones very glabrous. Racemes few-flowered; the flowers smaller than in the preceding species. Silique two inches long and nearly a line broad, pointed with the nearly sessile stigma. Seeds without a border; the cotyledons distinctly accumbent.

7. *A lyrata* (Linn.): stem branching from the base; radical leaves lyrate-pinnatifid and somewhat hirsute; cauline ones linear, entire, and with the stem glabrous; siliques erect, nearly straight; radicle slightly dorsal.—*Pursh, fl.* 2. *p.* 437; *DC. prodr.* 1. *p.* 146. Sisymbrium arabidoides, *Hook.! fl. Bor.-Am.* 1. *p.* 63. *t.* 1; *Darlingt. fl. Cest. ed.* 2. *p.* 387.

On rocks, Canada! to Virginia! April–May.—② Stem 4–12 inches high, at first erect, but at length diffuse. Radical leaves rosulate in the young plant; the segments usually obtuse, often toothed. Flowers as large as in A. petræa, white. Mature siliques 1½–2 inches long, scarcely more than half a line broad, pointed with a short style. Seeds without a border. Cotyledons flat, ovate; the radicle lying along the edge of one of them, so as to be nearly accumbent.—Our excellent friend Sir William J. Hooker refers this plant to Sisymbrium; but we retain it in Arabis, because, on a careful examination of numerous ripe seeds, we find the radicle so slightly dorsal that the cotyledons may be regarded as accumbent. We have never seen the seeds so evidently incumbent as they are represented in Hooker's figure.

8. *A. rupestris* (Nutt.! mss.): "more or less hirsute; radical leaves oblong-spatulate; cauline ones lanceolate, clasping, sparingly toothed; petals twice as long as the calyx; silique very long and narrow, erect-spreading.

"On rocks near the banks of the Oregon.—② Plant 1½–2 feet high; the pubescence simple or forked: upper part of the stem nearly smooth. Cauline leaves clasping, but not sagittate. Siliques about 3 inches long, less than a line in breadth. Seeds slightly margined." *Nutt.*—Near A. saxatilis.

9. *A. spathulata* (Nutt.! mss.): "hirsute (dwarf and somewhat cæspitose); leaves spatulate-oblong, entire; cauline ones clasping; petals roundish, spreading, about twice the length of the calyx; siliques rather short, diverging, pointed with a distinct slender style.

"Lofty dry hills of the Platte, from the Black Mountains to the central chain. May.—♃ About 4 inches high. Root thick, crowned with vestiges of former leaves and stems. Radical leaves on rather long petioles. Flowers white, somewhat conspicuous. Pedicel about half the length of the fruit. Silique scarcely half an inch long and nearly a line in breath; cells 7-10-seeded." *Nutt.* Seed oblong, with a narrow margin. Funiculus long and slender, free.—Near A. serpyllifolia of Europe.

10. *A. heterophylla* (Nutt. mss.): "nearly smooth; radical leaves spatulate, toothed; upper ones linear, sessile, entire; silique long and spreading; petals linear-oblong, exceeding the calyx.

"Near Paris, Maine? or in the vicinity of the White Mountains of New-Hampshire.—② Radical leaves somewhat pilose with simple hairs; upper ones linear, about 2 inches in length and a line or two in breadth. Siliques about 3 inches long." *Nutt.*—We have seen no specimens of this plant.

11. *A. sparsiflora* (Nutt. mss.): "somewhat pilose towards the base, much branched; cauline leaves oblong, clasping, entire; flowers minute; siliques very long, flat, spreading.

"Forests of the Rocky Mountains, towards the sources of the Oregon.—Stem tall, sparingly clothed on the lower part with forked hairs. Radical leaves not seen; cauline ones about 2-inches long, sessile or clasping. Flowers purple; petals longer than the sepals, linear-oblong." *Nutt.*

12. *A. puberula* (Nutt. mss.): "perennial, somewhat cæspitose, more or less pubescent with dense stellate hairs; leaves entire, linear-lanceolate, sessile; siliques flat, straight, pendulous, the pedicels about twice the length of the sepals; seeds with a slight margin.

"Forests of the Blue Mountains of Oregon.—Stem about a span high. Flowers not seen. Siliques slightly pubescent, the central nerve obvious." *Nutt.*

13. *A. microphylla* (Nutt. mss.): "smoothish and somewhat cæspitose; leaves linear, rather acute; cauline ones very few, sessile: stem filiform, very few-flowered; silique long, flat, spreading.

"Rocky Mountains: rather rare.—Leaves scarcely half an inch long. Siliques only 2–3, at the summit of the filiform stem, 2½ inches long. Flowers small, pale purple.—A smaller and fewer-flowered species than the preceding." *Nutt.*

** *Seeds with a broad winged margin.*

14. *A. lævigata* (DC.): erect, whole plant glabrous and glaucous; radical leaves oblong-obovate, attenuated into a petiole at the base, or somewhat sessile, acutely dentate-serrate; cauline leaves sessile; the lower ones lanceolate, sagittate, sparingly toothed; uppermost linear, entire; flowers spreading; siliques linear, narrow and elongated, recurved-pendulous.—*DC.! syst.* 2. *p.* 237; *Spreng. syst.* 2. *p.* 892; *Darlingt.! fl. Cest. ed.* 2. *p.* 382. A. pendula, *Nutt. gen.* 2. *p.* 70, not of *Linn.* Turritis lævigata, *Muhl.! fl. Lancast. ined.* 1. *p.* 483, *& in Willd. sp.* 3. *p.* 543; *Pursh! fl.* 2. *p.* 438.

β. laciniata: cauline leaves lanceolate-linear, remotely and laciniately toothed.

Rocky woods, and along rivers, Canada! to Virginia; west to Missouri and Arkansas! May.—② Stem 1–3 feet high. Radical leaves mostly of a purplish color; cauline ones 2–6 inches long, acutely toothed (the teeth in *β.* long and narrow). Sepals greenish-yellow, nearly as long as the narrow cuneiform erect (white) petals. Siliques 2–3 inches long and less than a line in breadth, pointed with the very short style. Funiculi adhering to the septum at the base.—Willdenow erroneously states that the siliques are erect, which mistake has led to much confusion respecting our plant. The description of De Candolle was drawn from a dwarf specimen, without fruit, in Pursh's herbarium.—T. lævigata, *Hook. fl. Bor.-Am.* 1. *p.* 43, must be a very different plant from the one here described.

15. *A. Canadensis* (Linn.): erect; leaves oblong-lanceolate, sessile, attenuate at each end, remotely toothed; pedicels villous, more than twice the length of the calyx; siliques pendulous, falcate, pointed with the distinct style.—*DC. prodr.* 1. *p.* 147; *Ell. sk.* 2. *p.* 148; *Deless. ic.* 2. *t.* 28. A. falcata, *Michx.! fl.* 1. *p.* 31. A. mollis, *Raf.! in Amer. month. mag.* 2. *p.* 43. A. lyræfolia, *Raf. l. c.*

Rocky places, Canada! to Georgia! west to Arkansas! June–July.—Stem 2–3 feet high, simple, glabrous, pubescent below. Leaves 2–4 inches long, nearly glabrous, or pubescent with simple hairs, rarely villous; the lower ones attenuated into a petiole, and sometimes lyrate or runcinate. Racemes elongated. Pedicels spreading, recurved in fruit, sometimes hispid. Sepals yellowish, hispid. Petals white, oblong-linear, twice as long as the calyx, nearly erect. Siliques 2–3 inches long, 1½ line wide, ancipital. Funiculi adhering to the septum, as was first noticed by R. Brown. (*Pl. of Oudney*, &c. *p.* 11.)

16. *A. canescens* (Nutt.! mss.): "cæspitose, densely and canescently pubescent with stellate hairs; leaves entire, linear, dense, crowded about the root; those of the stem much smaller, sessile; silique broadly linear, flat, nearly straight, pendulous, acute; stigma sessile.

"Summits of high hills in the Rocky Mountain range.—♃ Plant about a span high. Stems numerous, springing from the tuft of leaves at the crown of the root. Leaves nearly an inch long, rather obtuse, the pubescence very short; radical ones attenuated at the base. Raceme short; flowers very small. Pedicels about as long as the calyx. Sepals oblong. Petals spatulate-oblong, twice the length of the sepals, pale purple. Silique an inch and a half long, nearly a line and a half broad, somewhat torulose." *Nutt.*—Seeds with a broad margin, lying horizontally in the cell; the radicle superior: funiculi free.

‡ *Doubtful species.*

17. *A. reptans* (Lam.): leaves roundish, entire, hirsute; runners creeping. *DC.*—*Lam. dict.* 1. *p.* 122; *DC. syst.* 2. *p.* 242.

Sandy fields, Pennsylvania to Virginia, *Pursh.*—Is it Draba Caroliniana?

7. CARDAMINE. *Linn.; Lam. ill. t.* 562; *DC. syst.* 2. *p.* 245.

Silique linear; valves plane, nerveless, usually dehiscing elastically.—Seeds ovate, rarely bordered: funiculi slender.—Leaves petioled. Flowers white or pale purple.

* *Leaves undivided.*

1. *C. rotundifolia* (Michx.): glabrous or somewhat hirsute; leaves entire or repandly toothed; radical ones on long petioles, ovate or nearly orbicular; upper ones mostly sessile, oval-oblong or lanceolate; root usually tuberiferous.

α. stem erect or flexuous, simple or rarely branching above; radical and lower cauline leaves subcordate; flowers white.—C. rhomboidea, *DC. syst.* 2. *p.* 246; *Hook.! bot. misc.* 3. *p.* 239, *t.* 108; *Darlingt.! fl. Cest. ed.* 2. *p.* 384. Arabis rhomboidea, *Pers. syn.* 2. *p.* 204; *Nutt. gen.* 2. *p.* 70; *Ell. sk.* 2. *p.* 149. A. tuberosa, *Pers. l. c.* A. bulbosa, *Muhl.! cat. p.* 63.

β. stem erect, simple, hairy; leaves somewhat fleshy, the radical ones roundish cordate or reniform; cauline ones strongly repand-toothed; flowers large, deep rose-color, or purple.—C. rotundifolia, *Hook. fl. Bor.-Am.* 1. *p.* 44. Arabis Douglassii, *Torr.! in Sill. jour.* 4. *p.* 63.

γ. stem at first simple, afterwards sending off decumbent leafy stolons, which often take root; leaves obtusely repand-toothed, membranaceous; root mostly fibrous; flowers small, white.—C. rotundifolia, *Michx.! fl.* 2. *p.* 30; *DC. syst.* 2. *p.* 247; *Hook.! bot. misc. l. c. t.* 109; *Darlingt.! l. c.*

α. Wet meadows, Massachusetts! to Georgia. β. Hudson's Bay, Rocky Mountains, Lake Superior! Western part of the State of New York! to Kentucky! γ. Shady springs and rivulets, New Jersey! Pennsylvania; April–May.—♃ Plant 6–12 inches high. Leaves variable in size and form; the radical ones usually about an inch in length and breadth. Racemes 10–20-flowered; flowers in α. and β. half an inch in diameter; in γ. about half as large. Siliques spreading (in α. and β. three-fourths of an inch long; in γ. shorter), acuminated with the short style. Seeds few, orbicular.—Having had several opportunities of examining the C. rotundifolia of our friend Dr. Darlington in a living state, we are satisfied that it is not specifically distinct from C. rhomboidea, *DC.*," and that the difference in the appearance of the two plants depends on the place of growth. The former grows in cold sequestered springy places, where it does not readily bear fruit early in the season; and as summer advances, it becomes slender, procumbent, and loses its tubers at the base of the stem. Sir William J. Hooker has accurately figured and described both forms of the plant; but having seen the two pass into each other, we are obliged to dissent from our friends who consider them distinct. The var. γ. takes the place of the ordinary form in Canada, the western part of the State of New York, and the Western States.

2. *C. spathulata* (Michx.): radical leaves petioled, spatulate, entire, hirsute with a trifurcate pubescence; cauline ones sessile, ovate or linear-oblong; siliques spreading; stems decumbent.—*Michx.! fl.* 2. *p.* 29; *DC. syst.* 2. *p.* 247; *Ell. sk.* 2. *p.* 143.

High mountains of Carolina, *Michaux!*—① Stems 6–8 inches long, slender, glabrous. Leaves about an inch in length; the radical ones rosulate, rounded at the extremity; cauline ones entire or somewhat toothed. Racemes loose; the pedicels filiform and spreading. Siliques distant, one inch long; straight, rather acute. Stigma sessile.

3. *C. bellidifolia* (Linn.): leaves glabrous, somewhat fleshy; the radical ones ovate, petioled, entire; cauline ones few, entire or 3-lobed; siliques erect; stigma nearly sessile.—*DC. syst.* 2. *p.* 249; *Hook.! fl. Bor.-Am.* 1. *p.* 44. C. rotundifolia, *Bigel.! fl. Bost. ed.* 2. *p.* 252.

White Mountains of New Hampshire, *Bigelow*, *Oakes!* Arctic America and Rocky Mountains, Unalaschka, and California, *Douglas!* June–July. —♃ Plant 2–4 inches high. Raceme corymbed. Petals cuneiform, twice as long as the calyx, white. Siliques about an inch long, straight.

* * *Leaves ternately or pinnately divided.*

4. *C. purpurea* (Cham. & Schlect.): nearly glabrous; radical and cauline leaves 3-5-foliolate; lateral leaflets roundish-oval, acute; the terminal one roundish and cordate, 3-toothed; lower pedicel furnished with a leaf-like, cuneiform, 3-toothed bract; petals (deep purple) reticulately veined. *Cham. & Schlecht. in Linnæa*, 1. *p.* 20; *Hook. fl. Bor.-Am.* 1. *p.* 44; *Hook. & Arn. bot. Beechey*, *p.* 121.

Island of St. Lawrence, *Chamisso;* and Kotzebue's Sound, *Beechey.*— Radical leaves many, cauline leaf solitary; all on long petioles.

5. *C. angulata* (Hook.): leaves petioled, 3- (rarely 5-) foliolate, angled or incisely lobed, acute or cuneiform at the base, glabrous; radical ones roundish; cauline ovate or lanceolate. *Hook.! in bot. misc.* 1. *p.* 343. *t.* 69, *& fl. Bor.-Am.* 1. *p.* 44. Dentaria angulata, *Nutt.! mss.*

β. *alba:* leaves pubescent, always 3-foliolate; flowers white.—Dentaria angulata β. alba, *Nutt.! mss.*

Banks of the Oregon, *Scouler!* and near the outlet of the Wahlamet, *Nuttall!*—♃ Roots long, creeping, fibrous. Stem 12–18 inches high. Radical leaves on petioles 3–6 inches long. Flowers in corymbose racemes, as large as in C. pratensis: pedicels 4–6 lines long, spreading. Sepals scarcely one-fourth the length of the petals, broadly ovate, rather acute. Petals in α. pale rose color; in β. white, obovate, emarginate, spreading; claws much exserted. "Silique lanceolate, nearly a line in breadth." *Nutt.*

6. *C. pratensis* (Linn.): stem erect or decumbent; leaves pinnately 7–13-foliolate; leaflets mostly entire, often petiolulate, those of the radical leaves roundish, of the cauline ones oblong or linear; style short and thick.—*Pursh, fl.* 2. *p.* 440; *DC. prodr.* 1. *p.* 151; *Hook.! fl. Bor.-Am.* 1. *p.* 45.

Swamps, Arctic! and N. W. America, to the western part of New York! April–May.—♃ Stem 12–18 inches high. Lower leaves on long petioles, the leaflets petiolulate, sparingly toothed or entire; those of the upper leaves sometimes almost filiform. Flowers large, white or rose-color. Siliques erect, an inch long; the style short and thick, or rather slender: stigma capitate or somewhat 2-lobed.

7. *C. hirsuta* (Linn.): leaves pinnate or lyrately pinnatifid; leaflets of the radical leaves roundish, of the cauline ones oblong or linear, toothed or entire; petals (small) oblong-cuneiform; style short or none; stigma minute; siliques erect.—*DC. prodr.* 1. *p.* 152; *Hook.! fl. Bor.-Am.* 1. *p.* 45; *Darlingt. fl. Cest. ed.* 2. *p.* 385. C. Pennsylvanica, *Muhl.! cat. p.* 63; *Willd. sp.* 3. *p.* 486; *DC. prodr. l. c.*; *Ell. sk.* 2. *p.* 144.

β. *acuminata* (Nutt.! mss.): "stem somewhat hirsute; pedicels half as long as the conspicuously acuminate silique."

γ. *parviflora* (Nutt.! mss.): "somewhat hirsute; stem nearly naked; siliques very long, fastigiately corymbed."

δ. *Virginica:* leaflets with a single tooth on one or both sides: petals scarcely twice as long as the calyx; racemes strictly erect: stigma sessile.—C. Virginica, *Linn.?*; *Michx.! fl.* 2. *p.* 29; *DC. l. c.*

Wet places (δ. often on dry rocks), Arctic! and N. W. America! to Georgia! β. British America, *Richardson;* Oregon, *Nuttall!* May–June. γ. Oregon, *Nuttall!* δ. Connecticut! to Kentucky! ② Stem 4–18 inches high, glabrous or sparingly hirsute. Leaflets often petiolulate, repandly toothed, incised, or entire. Flowers about one-third of an inch in diameter, in γ. and δ. much smaller. Sepals ovate, obtuse. Petals obovate-spatulate, white. Siliques about an inch long.—This plant varies extremely in different seasons of the year and in different situations. We follow Sir W. Jackson Hooker, in considering all the forms described above as mere varieties of C. hirsuta, *Linn.* Mr. Nuttall, however, inclines to the opinion that C. Pennsylvanica is distinct from the European plant; and our δ. Virginica should perhaps rank as a separate species.

8. *C. oligosperma* (Nutt.! mss.): "somewhat hirsute; leaves pinnate, petiolate; leaflets reniform or obovate, conspicuously petiolulate, lobed or or toothed; the central segment often 3-lobed (flowers minute); siliques in terminal fascicles, broadly linear, acute, erect, few-seeded; pedicels about one-sixth as long as the siliques.

"Shady woods of the Oregon.—① or ② About a foot high, with a few short axillary branches; pubescence spreading, simple. Leaflets nearly orbicular with 3–5 teeth or lobes. Flowers scarcely 2 lines long, white, in very short racemes. Sepals oblong. Petals obovate-cuneiform at the base, but scarcely unguiculate. Siliques about an inch long and nearly a line in breadth; each cell containing from 6 to 8 rather distant seeds.—A Cardamine, apparently identical with this, but with shorter siliques, grows in California, near St. Barbara. A nearly allied allied species was collected in Chili by Dr. Styles (C. macrocarpa, *Nutt. mss.*) It is somewhat hairy; the leaflets broadly ovate and sinuately toothed; the flowers larger (white); the siliques scattered, and longer, with 15 to 18 seeds in each cell; and the pedicels elongated." *Nutt.*

9. *C. Ludoviciana* (Hook.): stems branching from the base, erect or diffused; leaves pectinately pinnatifid; segments oblong or linear, toothed; siliques rather erect, broadly linear; style none; seeds orbicular, margined! —*Hook.! in jour. bot.* 1. *p.* 191. C. Virginica, *Muhl. cat. p.* 63. *& fl. Lancast. ined.* 1. *p.* 476. Sisymbrium Ludovicianum, *Nutt.! mss. in herb. acad. Philad.*

Georgia! to Kentucky! Louisiana, and Arkansas.—① Stem 4–10 inches long. Radical leaves rosulate in the young plant; segments 7–10 pairs.

Flowers very small, white; pedicels as long as the calyx. Silique nearly an inch long, flat; the valves obscurely reticulated. Seeds about 15 in each cell, with an almost winged margin.—Easily distinguished by its broad siliques and margined seeds.

10. *C. digitata* (Richards.): leaves digitately pinnate; leaflets sessile, linear, entire; style short, about as thick as the silique; stigma capitate. *Richards. app. Frankl. journ. p.* 26; *DC. prodr.* 1. *p.* 53; *Hook. fl. Bor.-Am.* 1. *p.* 45.
Arctic America.—Stem creeping at the base (not tuberiferous, *Hook.*). Flowers as large as in Cardamine pratensis, white or purplish. Siliques not seen. *Richardson.*

‡ *Doubtful species.*

11. *C.? multifida* (Pursh): pubescent, branched; leaves interruptedly pinnately divided; segments bipinnatifid; ultimate divisions rounded, incised; siliques shorter than the pedicels. DC.—*Pursh., fl.* 2. *p.* 440; *DC. syst.* 2. *p.* 267.
Florida, near St. Augustine, *Bartram in herb. Banks.*—♃ Siliques oblong, scarcely 2 lines long, glabrous; style none. Pedicels filiform. *DC.*—Perhaps a Nasturtium.

C. reflexa and *C. angustifolia*, *Raf. fl. Ludov.*, having been founded upon the vague popular descriptions by Robin of plants which Rafinesque never saw, and of which he knew nothing whatever, of course cannot be admitted even to the rank of doubtful species.

8. DENTARIA. *Linn.; DC. syst.* 2. *p.* 271.

Silique lanceolate; valves plane, nervless, often dehiscing elastically: placentæ not winged. Seeds ovate, not bordered, in a single series: funiculi dilated.—Perennials. Rhizoma horizontal, fleshy, often irregularly toothed. Leaves ternately, palmately, or pinnately divided; radical ones (when present) on long petioles; cauline ones (often 3) near the middle of the stem or scape, verticillate or alternate. Flowers white or purple.

Scarcely more than a section of Cardamine.

1. *D. laciniata* (Muhl.): rhizoma moniliform; cauline leaves 3, usually veticillate, ternately parted; segments incised, the lateral ones lobed.—*Muhl.! in Willd. sp.* 3. *p.* 479. *& cat. p.* 63; *DC. prodr.* 1. *p.* 155; *Ell. sk.* 2. *p.* 144; *Bart. fl. Am. sept.* 3. *t.* 72; *Hook. fl. Bor.-Am.* 1. *p.* 46. D. concatenata, *Michx.! fl.* 2. *p.* 30.
α. segments of the leaves lanceolate or linear-lanceolate, incisely toothed.
β. segments laciniately pinnatifid.
γ. segments narrowly linear, sparingly toothed, or nearly entire.
δ. leaves alternate; segments ovate, incisely toothed and lobed, a little rough on the margin.
Rich alluvial soils, Canada to Georgia! and west to the Mississippi. Watertown, New-York, *Dr. Crawe!* Macon, Georgia, *Croom!* April–May.—Plant 4–12 inches high. Tubers of the rhizoma connected by a neck, sparingly fibrillose, pungent to the taste like mustard. Cauline leaves verticillate above the middle of the stem, or alternate (rarely 2), on short petioles; segments variable in width and in the form and length of the teeth or laciniæ; radical leaves sometimes wanting. Petals 3 times the length of the

sepals, pale purple, or nearly white, obovate-oblong. Style when young not longer than the stamens. Silique somewhat torulose, with a long tapering point.—We have not seen the var. δ. in fruit. It is so remarkable in the form of its leaves that it may prove to be a new species. It is perhaps the D. maxima of Nuttall, although it by no means agrees with the detailed description of that botanist.

2. *D. maxima* (Nutt.): stem tall; leaves (5–7) alternate, remote, the margin a little roughened; leaflets somewhat oval, incisely and acutely toothed, lateral ones lobed (flowers pale purple). *Nutt. gen.* 2. *p.* 66; *DC. prodr.* 1. *p.* 155.

Western part of the State of New-York, and Pennsylvania. *Nuttall.*—Stem often nearly 2 feet high. Tubers concatenate. *Nutt.*

3. *D. multifida* (Muhl.): stem 2–3-leaved; leaves mostly verticillate, 2–3-ternately divided; segments and lobes all linear and very narrow; siliques narrow.—*Muhl.! cat. p.* 63; *Ell. sk.* 2. *p.* 143. D. dissecta, *Leavenworth, in Sill. jour.* 7. *p.* 62.

Shady woods, near Salem, N. Carolina, *Schweinitz!* Cherokee country, *Dr. Leavenworth;* near Tuscaloosa, Alabama, *Nuttall.*—A span high. Rhizoma tuberous. (*Nutt.*) Leaves with remarkably narrow divisions, almost as fine as those of the Carrot. Flowers white (*Nutt.*), smaller than in D. laciniata.

4. *D. heterophylla* (Nutt.): rhizoma moniliform, the tubers oblong; cauline leaves 2 (rarely 3), petioled, alternate, ternately divided; leaflets linear-lanceolate, entire or toothed; margin minutely and ciliately roughened; radical leaves rather obtusely lobed.—*Nutt.! gen.* 2. *p.* 66; *DC. prodr.* 1. *p.* 155.

Shady woods, near banks of rivers, Pennsylvania! to Kentucky! April–May.—A foot high. Leaflets of the radical leaves incisely lobed and crenately toothed, the teeth minutely mucronate. Pedicels about as long as the purplish flowers. Siliques with a long tapering point. Stigma capitate or obscurely 2-lobed.

5. *D. diphylla* (Michx.): rhizoma elongated, toothed; cauline leaves 2, ternately divided; segments ovate or oblong, unequally and incisely toothed. —*Michx.! fl.* 2. *p.* 30; *Bot. mag. t.* 1465; *DC. prodr.* 1. *p.* 169; *Hook. fl. Bor.-Am.* 1. *p.* 46.

Shady woods, in rich soil, Canada! to S. Carolina, west to the Mississippi! April–May.—Rhizoma extensively creeping, often branched, marked with projecting teeth, very pungent to the taste (hence the vulgar name, *Pepper-root*). Leaves closely approximated above the middle of the stem: petiole about an inch long. Flowers white or very pale purple: pedicels rather thick, longer than the flower, spreading.

6. *D. tenella* (Pursh): root fibrous, bearing roundish tubers (Hook.); radical leaves simple, roundish, about 5-lobed; cauline leaves 1–4, alternate, ternately or pinnately divided; segments linear, acute, entire or sparingly toothed.—*Pursh! fl.* 2. *p.* 439; *DC. prodr.* 1. *p.* 155. D. tenuifolia, *Ledeb. in mem. acad. St. Petersb.* (1815) *p.* 547 ?; *Hook. fl. Bor.-Am.* 1. *p.* 46.

Oregon, *Menzies*, *Nuttall!*—Plant 3–10 inches high. Radical leaves scarcely an inch long, crenately lobed. Stem often bearing but a single nearly sessile leaf. Flowers rather smaller than in Cardamine pratensis, pale purple.—Mr. Nuttall thinks this plant to be distinct from D. tenuifolia of Ledebour; while Sir W. J. Hooker states that he could find no difference between them. In our Siberian specimens of the latter, the cauline leaves are distinctly petioled, with toothed divisions, and the flowers are considerably larger than in the Oregon plant. They have, however, at least in one of our specimens, a simple lobed radical leaf.

7. *D. macrocarpa* (Nutt. mss.): "root fibrous and tuberous; radical leaf 3-foliolate, the leaflets reniform and lobed; cauline leaf solitary, 3-parted, the segments entire, obtuse; silique very long.

"Woods of the Oregon, with the preceding.—A small species, remarkable for the great length of its silique, its cuspidate and rather long style, and capitate stigma. On the receptacle, (as in the preceding,) there remain some time after inflorescence, 2 filiform denticulations, like abortive stamens.—Described from a single specimen." *Nutt.*

8. *D. integrifolia* (Nutt. mss.): "rhizoma tuberous; tall and rather robust; radical leaves trifoliolate, leaflets roundish-oval; cauline 3, alternate, 3-parted or trifoliolate; divisions linear-oblong, acute, entire; siliques rather short, on long pedicels; petals very large.

"Plains of Monterey, Upper California.—Stem 12–18 inches high. Petiole of the solitary radical leaf very long; the leaflets large. Flowers among the largest of the genus." *Nutt.*

9. *D. Californica* (Nutt. mss.): "rather robust; leaves trifoliolate, cauline ones alternate; leaflets ovate or ovate-lanceolate, crenate or incisely denticulate, acute; siliques lanceolate-linear, rather long.

"Monterey, Upper California.—About the size of the preceding species, but with smaller flowers. Cauline leaves 2–3, nearly as large as the radical ones, and similar in form." *Nutt.*

9. PARRYA. *R. Br. in Parry's 1st voy. app. p.* 269. *t. B.*

Neuroloma, *Andrz.; DC.*

Silique broadly linear; valves veiny. Seeds in a double series, margined; the epiderms loose and more or less corrugated: funiculi partly adnate to the septum. Lobes of the stigma approximate.—Perennial herbs. Leaves mostly radical, fleshy, entire or toothed. Flowers rose-color or purple.

1. *P. macrocarpa* (R. Brown): siliques broadly linear; anthers linear; leaves broadly lanceolate, incisely toothed. *Hook.*—*R. Br. l. c. p.* 270; *Hook. fl. Bor.-Am.* 1. *p.* 47. *t.* 16. Neuroloma arabidiflorum & nudicaule, *DC. prodr.* 1. *p.* 156. Arabis nudicaulis, *DC. syst.* 2. *p.* 240. Cardamine articulata, *Pursh, fl.* 2. *p.* 439.

α. aspera (Hook.): pilose with glandular hairs.—Neuroloma arabidiflorum *β. DC. l. c.*

β. glabra (Hook.): whole plant glabrous.—N. arabidiflorum, *DC. l. c.* (excl. syn.)

Arctic and N. W. America.—Rootstock fusiform. Scape 4–6 inches high. Petals rose-color or purple, broadly obovate, retuse. Silique 1–2 inches long and 2 lines wide, erect, slightly incurved, somewhat constricted between the seeds. Seeds slightly corrugated, with a broad membranaceous border. *Hook.*

2. *P. arctica* (R. Brown): siliques linear-oblong; anthers oval; leaves mostly entire; peduncles glabrous. *R. Br.! l. c. p.* 269. *t. B.*; *Hook.! fl. Bor.-Am.* 1. *p.* 47, *& in Parry's 2nd voy. app. p.* 838.

Arctic America! confined to the eastward of Mackenzie's River, as the preceding species is to the westward of it. *Hook.*—Plant 2–4 inches high. Leaves spatulate-lanceolate. Flowers as large as in Cardamine pratensis, corymbed: petals purple, rarely white; limb obovate. Siliques about an inch long, racemose, spreading or pendulous, obtuse. Seeds 6–8 in each cell, strongly corrugated.

10. PHŒNICAULIS. *Nutt. mss.*

"Calyx colored, nearly equal at the base, much shorter than the entire unguiculate petals. Silique ensiform, acuminate, flat, not opening elastically; the cells about 3-seeded; valves with a prominent central nerve. Seeds large, in a single series, not margined; funiculi flat, short, dilated and slightly adnate towards the base. [Cotyledons flat; the radicle not applied to their edge, but lying a little to one side.]—A low perennial herbaceous plant, with a thick ascending caudex. Scapes slender. Leaves entire, densely and stellately tomentose. Flowers in simple corymbose racemes, purple. Siliques diverging horizontally."

P. cheiranthoides (Nutt.! mss.)

"High hills to the east of Wallawallah River, and on rocks on the upper part of the Oregon.—Stem partly subterranean and descending to a considerable depth. Leaves oblong-lanceolate, entire; the base attenuated into a long petiole which is dilated and sheathing at its insertion. Scapes 4–6 inches long, with a few small sessile and partly clasping leaves. Sepals oblong, obtuse, bright purple on the margin. Petals purple, oblong-oval, the claws as long as the calyx. Stamens about as long as the calyx. Stigma nearly sessile, somewhat capitate. Pedicels of the flowers erect, of the fruit divaricate. Siliques straight 1–1½ inch long, obtuse at the base, tapering to a long point: valves obscurely reticulated: [septum opaque, with a distinct single or double longitudinal nerve: areolae very tortuous, reticulated.] Seeds oval, smooth, distant, nearly as broad as the septum.—Allied to Parrya macrocarpa; but differing in the cuspidate siliques, the few seeds in a single series, without the loose epidermis." *Nutt.*—The cotyledons are not truly accumbent; but the radicle is applied to the back of one of them, not far from the edge.

11. LEAVENWORTHIA. *Torr. in ann. lyc. New-York*, 3. *p.* 87. *t.* 5.

Calyx somewhat erect, equal at the base. Petals equal, cuneiform, truncate or emarginate. Filaments distinct, toothless. Silique sessile, oblong-linear, compressed, somewhat inflated and contracted between the seeds; valves indistinctly nerved. Style distinct, or almost none. Stigma minutely bidentate. Seeds in a single series, flattened, with a broad winged margin: funiculi free. Embryo nearly straight! or with the radicle slightly bent towards the edge of the cotyledons: radicle very short, conical, pointing obliquely upward: cotyledons orbicular. Septum 1-nerved, minutely reticulated; the areolæ transversely linear-oblong.—Annual herbaceous plants. Leaves lyrately pinnatifid. Flowers in loose scapoid racemes, or solitary on long subradical peduncles, yellow.

1. *L. aurea* (Torr.): style distinct; embryo nearly straight. *Torr. l. c.* Cardamine uniflora, *Leavenworth, in Sill. jour.* 7. *p.* 63, (not of *Michx.*)

Wet places, near Fort Towson, Arkansas; also in Texas, and in Jefferson County, Alabama, *Dr. Leavenworth!*—Root straight, descending. Plant 2–6 inches high. Stem at first short and simple, but at length branching from the base; the branches ascending. Leaves mostly radical; pinnatifid, somewhat fleshy; segments 2–4 pairs, roundish-oblong, obtusely toothed; the terminal one much larger and somewhat orbicular. Racemes 4–10-flowered. Flowers in the young plant, or in dwarf specimens, on long erect naked peduncles or scapes; in the advanced state on racemes which terminate the short assurgent branches. Pedicels without bracts, an inch or more in length, filiform, spreading and curved upward. Sepals rather loose, oblong, obtuse, tinged with purple. Petals golden yellow, tapering into a long cuneate base. Filaments slender: anthers oblong. Style short, but conspicuous. Silique rather more than an inch long and nearly two lines in breadth, slightly torulose, rather convex: septum very thin and transparent. Seeds 4–5 in each cell, suspended on short rigid funiculi, approximated so that their broad membranaceous margins somewhat overlap. Embryo nearly straight, from the earliest to the most advanced state. Radicle pointing upward, at first inclined from the hilum, but afterwards gradually approximating towards it.

2. *L. Michauxii* (Torr.): style almost none; radicle oblique. *Torr.! l. c.* Cardamine uniflora, *Michx.! fl.* 2. *p.* 29; *Pursh, fl.* 2. *p.* 439; *DC. syst.* 2. *p.* 251.

On rocks about Knoxville, Tennessee, *Michaux!* and on wet rocks, Kentucky, *Short!*—Greatly resembling the preceding species, but easily distinguished by its nearly sessile stigma. The difference in the direction of the radicle seems also to be constant. Michaux states that the peduncles are radical and one-flowered, but the specimens in his herbarium are caulescent; the racemes terminating short assurgent branches, and the pedicels being greatly elongated, so as to resemble scapes.

TRIBE II. SISYMBREÆ. *DC.*

Silique longitudinally dehiscent; valves nearly plane, or somewhat terete and carinate: septum linear. Cotyledons plane, incumbent (o‖), contrary to (i. e. with their edges towards) the septum. Seeds not bordered.

12. HESPERIS. *Linn.; DC. syst.* 2. *p.* 446.

Silique nearly terete, or 4-sided and somewhat compressed. Stigmas 2, erect, connivent. Inner sepals saccate at the base. Seeds somewhat 3-sided. Stamens toothless.—*Rocket.*

1. *H. matronalis* (Linn.): stem erect, nearly simple; leaves ovate-lanceolate, toothed; pedicels as long as the calyx; petals obovate, siliques glabrous, torose, erect, margin not thickened (flowers white or rose-color). *DC. prodr.* 1. *p.* 189; *Hook. fl. Bor.-Am.* 1. *p.* 59.

Shores of Lake Huron, *Dr. Todd.* (fide *Hook.*)—Doubtless introduced.

2. *H. minima:* pubescent with appressed 2-parted hairs; leaves linear-lanceolate, attenuate at the base; siliques numerous, erect, compressed, pubescent; stem erect, simple. *Hook.*—H. pygmæa, *Hook. fl. Bor.-Am.* 1. *p.* 60. *t.* 19. (not of *Delile*) Cheiranthus pygmæus, *Adams; DC. prodr.* 1. *p.* 137, fide *Hook.*

Arctic America, Kotzebue's Sound.—① Root fusiform. Stem in fruit a span high, a little flexuous. Leaves mostly radical, entire or sinuate-toothed. Corymb many-flowered, racemose in fruit. Petals large, obovate, purple.

Stigma 2-lobed. Siliques linear-ensiform, slightly falcate, pale purple. *Hook.*—Sir William Hooker is inclined to refer to this species Cheiranthus Pallassii, *Pursh*, which is described as having rather terete siliques and a subcapitate stigma. If his suspicion is confirmed, Pursh's specific name must be adopted.

3. *H. Menziesii* (Hook.): leaves spatulate, fleshy, covered with an appressed 2-parted pubescence; siliques (young) spreading; stem very short, erect, simple. *Hook. fl. Bor.-Am.* 1. *p.* 60.
California.—Root perennial, ligneous. Flowers larger than in the preceding species, purple? *Hook.*

13. SISYMBRIUM. *Allioni; DC. syst.* 2. *p.* 458. See [illegible]

Silique somewhat terete. Stigmas 2, somewhat distinct, or connate and capitate. Sepals equal at the base. Seeds ovate or oblong. Cotyledons sometimes oblique.

§ 1. *Siliques subulate, terminated with a short style: pedicels very short, thickened and appressed to the axis after flowering.*—Velarum, *DC.*

1. *S. officinale* (Scop.): leaves runcinate, and, with the stem, hairy, flowers very small (yellow). *DC. prodr.* 1. *p.* 191; *Hook. fl. Bor.-Am.* 2. *p.* 61. Erysimum officinale, *Linn.*; *Pursh, fl.* 2. *p.* 436; *Ell. sk.* 2. *p.* 148.
Road-sides and waste places, Canada! to Georgia; Oregon. May–Aug. Introduced.—① Stem 1–3 feet high. Racemes elongated, curved in fruit. Petals cuneate, longer than the calyx. Siliques 6–10 lines long, attenuate into a short style.

S. niagarense, Torr. [illegible] See [illegible]

§ 2. *Siliques terete: style very short: calyx spreading or erect: seeds oblong.*—Norta, *DC.*

2. *S. junceum* (Bieb.): leaves glabrous, glaucous; the lower ones petioled, runcinately pinnatifid; upper ones linear-lanceolate, entire. *DC. prodr.* 1. *p.* 191; *Hook. fl. Bor.-Am.* 1. *p.* 61.
Dry stony places on the Oregon, *Douglas*, and Rocky Mountains towards the source of Salmon River, *Mr. Wyeth.* (fide *Nutt.*) Apparently identical with the European plant. *Nutt.*

3. *S. linifolium* (Nutt.! mss.): glabrous; stem slender, simple; leaves linear, undivided, the lower ones somewhat laciniately cleft (flowers large); petals nearly twice as long as the calyx; siliques linear and narrow.—Nasturtium linifolium, *Nutt.! in jour. acad. Philad.* 7. *p.* 12.
Plains of the Rocky Mountain range, towards the head-waters of the Platte, *Mr. Wyeth!* May—♃ Stem 8–12 inches high. Leaves all narrow, not glaucous: the axils often leafy. Silique about 2 inches long.—Very near the preceding, but the flowers and siliques are larger.

4. *S. pygmæum* (Nutt.! mss.): dwarf, nearly smooth; stem somewhat simple; lower leaves somewhat lyrately pinnatifid, oblong; upper ones entire, linear; petals longer than the calyx; silique long and narrow.—Nasturtium pumilum, *Nutt. ! l. c.*
Head waters of the Missouri, in dry soils. Flowering early in the spring.—♃ Stem 3 inches high, slightly pubescent. Leaves attenuated at the base into a petiole; terminal segment rounded and obtuse. Flowers about 3 lines long, in short racemes.

§ 3. *Siliques terete: seeds ovate, somewhat triangular: flowers yellow.*—Irio, *DC.*

5. *S. Sophia* (Linn.): leaves bipinnatifidly divided; lobes oblong-linear, incised; pedicels 4 times the length of the calyx; petals smaller than the sepals. *DC.—Pursh, fl.* 2. *p.* 440?; *DC. prodr.* 1. *p.* 193.

Near Quebec, and other parts of Lower Canada, *Mrs. Percival!* near Montreal, *Dr. Holmes;* Virginia, *Pursh.* Apparently native in Canada. July.—① Plant 2 feet high. Segments of the leaves less than a line in breadth. Siliques an inch long, linear, very narrow.

6. *S. sophioides* (Fischer): leaves bipinnatifid; lobes ovate or lanceolate, incised; pedicels (and petals) somewhat shorter than the calyx; siliques linear-filiform, falcate, and, as well as the flowers, in umbelliform corymbs. *Hook.—Fisch. in Hook. fl. Bor.-Am.* 1. *p.* 61. *t.* 20. S. Sophia, *Cham. & Schlecht. in Linnæa,* 1. *p.* 28. S. Sophia, var.? *Richards. app. Frankl. journ. p.* 27.

Hudson's Bay to Kotzebue's Sound.—① Stem branching, flexuous, nearly glabrous. Peduncles glandular-pubescent. Flowers deep yellow. Siliques densely umbelled (not elongated into a raceme in fruit), 2 inches long, 3 times the length of the pedicels.

7. *S. canescens* (Nutt.): leaves bipinnatifid; lobes oblong or lanceolate, somewhat toothed; petals scarcely exceeding the calyx; siliques in elongated racemes, oblong or oblong-linear, shorter (or rarely longer) than the pedicels.

α. canescent; lobes of the leaves obtuse (or obovate); siliques somewhat clavate, about half as long as the pedicels.—S. canescens, *Nutt.! gen.* 2. *p.* 68; *DC. prodr.* 1. *p.* 194; *Ell. sk.* 2. *p.* 147; *Hook. fl. Bor.-Am.* 1. *p.* 62. Erysimum pinnatum, *Walt. Car. p.* 174. Cardamine? Menziesii, *DC. prodr.* 1. *p.* 153. (fide *Hook.*)

β. leaves minutely pubescent, but not hoary; peduncles and pedicels sparingly furnished with stipitate glands intermixed with simple pubescence; siliques as in var. α.

γ. leaves glabrous; lobes obtuse, mostly entire; stem and pedicels minutely glandular; siliques as in var. α. & β.

δ. lobes of the leaves somewhat acute, and, with the stem, furnished with minute stipitate glands; petals rather longer than the calyx; siliques scarcely attenuate at the base, somewhat longer than the pedicels.—S. brachycarpum, *Richards.! app. Frankl. Journ. ed.* 2. *p.* 27; *DC. prodr.* 1. *p.* 194; *Hook. fl. Bor.-Am.* 1. *p.* 62.

ε. (*Californicum*): somewhat canescent; lobes of the leaves acutely toothed; petals obovate, one-half longer than the calyx.

ζ. (*brevipes*, Nutt. mss.): "siliques usually longer than the pedicels."

α. Arctic America to Florida! Arkansas! Rocky Mountains, plains of the Oregon, and Upper California, *Nuttall.* β. Georgia! Arkansas! Texas! γ. Kentucky, *Short!* δ. Arctic America and Canada, ex *Hook.;* Lake Superior, *Dr. Houghton! Dr. Pitcher!* ε. California, *Douglas!* ζ. Rocky Mountains, *Nuttall.*—① Plant 1–2 feet high. Flowers very small (in var. ε. twice as large as in the other varieties). Pedicels spreading, with the siliques often erect.

§ 4. *Siliques linear, compressed, somewhat terete: stigma nearly sessile: flowers white (or rose-color): peduncles usually short.*—Arabidopsis, *DC.*

8. *S. humile* (Ledeb.): canescently pubescent, perennial; stems diffuse; leaves entire or sinuate-toothed; radical ones spatulate; cauline ones lanceo-

late, attenuate at the base; siliques pubescent, terete, torulose, linear; 5 times the length of the pedicels. *Hook.! fl. Bor.-Am.* 1. *p.* 62.

α. leaves mostly entire. *Ledeb.—Hook. l. c.*

β. leaves sinuate-toothed and somewhat pinnatifid. *Ledeb.—Hook. l. c.*

Rocky Mountains, lat. 52°–57°, to Arctic America!—Stems 3–6 inches high. Radical leaves numerous, rosulate, nearly an inch long: pubescence stellate. Flowers 3–4 lines in diameter, "white or rose-color." *Hooker.*

9. *S. Thaliana* (Gay): annual; stems often many from one root, rather naked, branching above, erect; leaves (and lower part of the stem) hairy, sparingly toothed; radical ones ovate-oblong or spatulate-oblong, somewhat petioled; siliques erect-spreading, twice as long as the pedicels.—*Gay, in ann. sci. nat.* 7. *p.* 399; *Hook. fl. Bor.-Am.* 1. *p.* 63; *Meyer, pl. Cauc.* (1831) *p.* 190. Arabis Thaliana, *Linn.; Eng. bot. t.* 901; *Pursh! fl.* 2. *p.* 437; *DC. prodr.* 1. *p.* 144.

On rocks and in sandy fields, Massachusetts! to Georgia! west to Kentucky. Introduced? May.—Stem 3–10 inches high; the upper part glabrous. Cauline leaves oblong or linear. Flowers very small. Siliques straight, 6–8 lines long. Seeds in a single series.

10. *S. glaucum* (Nutt.! mss.): "annual, glaucous, much branched; leaves entire; radical ones small, spatulate; cauline ovate, sagittate and clasping, rather acute; siliques nearly straight, erect, compressed, with convex valves, four times the length of the pedicels.

"Prairies of the Oregon, towards the Rocky Mountains.—About a foot high, erect. Flowers very minute, pale purple. Petals cuneate-oblong, one-half longer than the sepals. Siliques three-fourths of an inch long, glabrous: style almost none. Seeds in a single, or partly in a double series. Cotyledons decidedly incumbent." *Nutt.*

11. *S. virgatum* (Nutt.! mss.): "biennial, canescently hirsute with simple and stellate hairs; stem virgately branched from the base; leaves lanceolate-linear, clasping, lower ones denticulate or entire; siliques somewhat terete, erect, 4–5 times the length of the pedicels; seeds in a double series.

"Hills of the Rocky Mountain range, near the sources of the Sweet Water of the Platte.—About a span high. Leaves 6–8 lines long, and 2 lines wide. Flowers rather larger than in the preceding species, pale purple. Petals obovate-spatulate, obtuse. Radicle almost exactly dorsal." *Nutt.*—Septum very thin and translucent, marked with a distinct central nerve.

12. *S. pauciflorum* (Nutt.! mss.): "biennial, hirsute with forked hairs (not canescent); leaves entire, radical ones narrowly oblong-spatulate; cauline lanceolate-linear, sessile; stem rather slender, branching from the base; siliques long, pendulous; seeds in a double series.

"With the preceding.—Stem about a foot high, slender, nearly smooth above. Flowers about twice as large as in the preceding species, white. Petals exserted. Siliques three times as long as the pedicels." *Nutt.*

‡ *Doubtful species.*

13. *S? teres*: small, erect, branched; leaves all somewhat lyrately pinnatifid; siliques rather short, linear, acuminate, on very short pedicels.—Cardamine teres, *Michx.! fl. Bor.-Am.* 2. *p.* 29; *DC. syst.* 2. *p.* 259.

Vermont, on Lake Champlain, *Michaux.!*—① Stem about 8 inches high, a little roughened with short hairs. Leaves nearly glabrous, cauline ones with 3–4 pairs of lobes; the lobes entire or toothed, terminal one 3-cleft. Racemes long: pedicels about a line long. Siliques erect, one-third of an inch in length, pointed with a slender style one line in length; valves very convex. Seeds very numerous: cotyledons distinctly incumbent.—We have removed this little-known plant to Sisymbrium, on account of the incumbent cotyledons; but we are by no means certain that it belongs to this genus. De Candolle asks whether it may not be a Nasturtium. The specimens in Michaux's herbarium are only in fruit.

S. leptopetalum (Raf.) *fl. Ludov. p.* 268.—See note on p. 86.

14. TROPIDOCARPUM. *Hook. ic.* 1. *t.* 43.

Silique linear or lanceolate-linear, compressed contrary to the septum; valves somewhat carinate. Septum very narrow, often incomplete. Seeds oblong, compressed, not margined. Cotyledons narrow, shorter than the radicle. Sepals equal at the base.—Herbaceous annuals. Leaves pinnatifid. Flowers small, yellow, in leafy racemes.

1. *T. gracile* (Hook.): nearly glabrous; leaves pinnatifid; silique linear. —*Hook. l. c.*

Wet places on the plains around Monterey, Upper California, *Douglas, Nuttall!*—Stem decumbent, 6–12 inches long, very sparingly hirsute. Radical leaves bipinnatifid, the others pinnatifid; segments narrowly linear and very acute. Flowers from the axis of the uppermost leaves, on slender peduncles, 3–8 lines long. Sepals oblong. Petals obovate, erect, nearly twice the length of the sepals. Silique about an inch long, attenuated into a short style; the septum sometimes nearly obliterated.

2. *T. scabriusculum* (Hook.): somewhat roughly hirsute; leaves bipinnatifid; silique lanceolate.—*Hook.! l. c. t.* 52.

With the preceding, *Douglas! Nuttall!*—Differs from T. gracile chiefly in its hirsute pubescence, rather shorter leaves and peduncles, and somewhat smaller flowers.—The ripe siliques of this species have the septum complete the whole length. It is very narrow, so that, at the upper part, the opposite placentæ are almost in contact. Hooker has not described the seeds of this genus, probably because his specimens were immature. The cotyledons are decidedly incumbent, but lie with their edges parallel to the septum!

15. ERYSIMUM. *Linn.; DC. syst.* 2. *p.* 491.

Silique 4-sided. Calyx closed. Cotyledons oblong.

§ *Style short or scarcely any: calyx deciduous: leaves neither cordate nor clasping: flowers distinctly pedicellate.*—Erysimastrum, *DC.*

1. *E. cheiranthoides* (Linn.): somewhat scabrous with a minute appressed pubescence; leaves lanceolate, denticulate or entire; siliques erect, spreading, twice the length of the pedicels; stigma small.—*Pursh, fl.* 2. *p.* 436; *DC. prodr.* 1. *p.* 198; *Hook.! fl. Bor.-Am.* 1. *p.* 64. E. parviflorum, *Pers. syn.* 2. *p.* 199; *Nutt.! gen.* 2. *p.* 16.

Along streams, throughout the United States! and Canada! west to Missouri and N. W. Coast. July–Aug.—① or ② Stem 1–2 feet high, simple or branched. Pubescence 3–4-parted. Flowers small, yellow. Siliques about an inch long, pointed with a short style.—A native also of Europe.

2. *E. lanceolatum* (R. Brown): canescently scabrous with an appressed 2-parted pubescence; stem nearly simple; leaves linear-lanceolate, the lower ones usually toothed; claws of the petals longer than the calyx; siliques

long, erect; stigma emarginate. *Hook.*—*R. Br. in hort. Kew.* (*ed.* 2.) 4. *p.* 116; *DC. prodr.* 1. *p.* 199; *Hook. fl. Bor.-Am.* 1. *p.* 64. Cheiranthus erysimoides, *Linn.*

Canada to Arctic America.—Distinguished from the preceding by its more pubescent leaves, shorter siliques, and larger flowers. *Hook.*

3. *E. asperum* (DC.): canescent with a scabrous appressed pubescence, the hairs fixed by the middle; stem simple; leaves linear-lanceolate, cauline ones entire, radical ones runcinate-toothed; siliques elongated, at length spreading; style short, very thick; stigma 2-lobed.—*DC.! syst.* 2. *p.* 506; *Hook. fl. Bor.-Am.* 1. *p.* 64. *t.* 22. E. lanceolatum, *Pursh, fl.* 2. *p.* 436. (fide *DC.*) Cheiranthus asper, *Nutt.! gen.* 2. *p.* 69.

Missouri! to Oregon, and in British America, north to lat. 65°. ② Stem 12–18 inches high. Cauline leaves 2 inches long, 2–3 lines wide; margin retrorsely scabrous. Flowers large, fragrant. Petals with the claws longer than the sepals. Siliques 2–3 inches long, scarcely a line wide, somewhat quadrangular. Seeds oblong. Cotyledons distinctly incumbent, although the radicle is a little oblique.

4. *E. Arkansanum* (Nutt.! mss.): "slightly roughened with appressed hairs, which on the stem are fixed by the middle and on the leaves 3-parted; stem simple; leaves oblong-lanceolate, runcinately and sinuately toothed, attenuate at the base; siliques elongated, nearly erect, tapering at the summit; stigma 2-lobed.

"Open plains of Arkansas. [Also in Texas, *Dr. Leavenworth!*]—② Stem 1½–3 feet high, angular above. Leaves about 2 inches long, scarcely one-third of an inch wide; the radical ones almost pinnatifidly toothed, with distant teeth. Raceme at first short and corymbose; in fruit much elongated. Flowers as large as in the common *Wall-flower*, yellow, shaded with orange. Claws of the petals much exserted; limb broadly obovate. Siliques 2½ inches long, almost exactly 4-sided." *Nutt.*—Cotyledons obliquely incumbent. Differs from the preceding in the less scabrous pubescence, narrower and toothed leaves, and in the tapering summit of the style, as well as in the larger flowers.

5. *E. elatum* (Nutt.! mss.): "somewhat scabrous; the hairs on the stem fixed by the middle, on the leaves 3–4-parted; stem tall and simple; radical leaves usually runcinate; cauline lanceolate, remotely denticulate, attenuated at each extremity.

"Grassy situations by the banks of the Wahlamet.—② Stem 3–5 feet high, covered with minute appressed hairs, but not canescent. Radical leaves more or less divided or toothed, sometimes, as likewise those of the stem, almost entire. Flowers very large, colored with various shades of yellow and orange. Claws of the petals exserted, half an inch or more in length; limb obovate. Mature siliques not seen." *Nutt.*—Very near the preceding.

6. *E. parviflorum* (Nutt. mss.): "canescent and scabrous; stem low and simple; leaves all linear or somewhat lanceolate, almost wholly entire; siliques erect; petals scarcely longer than the calyx.

"Plains of the Rocky Mountains.—② or ♃ About a foot high. Leaves remarkably narrow, densely clustered at the base of the stem. Flowers small, sulphur-yellow." *Nutt.*

7. *E. pumilum* (Nutt. mss.): "somewhat scabrous; leaves linear, (apparently) all entire; siliques flatly 4-sided, very long, erect; pedicels very short; stigma small, nearly entire; petals longer than the calyx.

"Dry elevated plains of the Rocky Mountains.—① Stems 2–4 inches high. Flowers pale yellow, conspicuous. Siliques 3 inches or more in length." *Nutt.*

8. *E. grandiflorum* (Nutt.! mss.): "dwarfish, slightly roughened with appressed forked or stellate hairs; leaves oblong-spatulate, obtuse, entire or somewhat angularly lobed towards the base; petioles long and slender; flowers in capitate corymbs; siliques very long, somewhat torulose; stigma conspicuously 2-lobed.

"Sand hills of Point Pinus, in the vicinity of Monterey, Upper California. March.—Root very long and straight, perennial. Stems growing partly under the sand, crowned with the vestiges of several years' growth of leaves; the part above-ground 3 to 6 inches in height. Leaves very flat, often wholly entire, sometimes repandly denticulate, sometimes angularly lobed below; lamina an inch or more in length and 5–6 lines broad, attenuated at the base into a slender petiole 1–2 inches long. Corymb scarcely extending beyond the leaves. Flowers fragrant, deep yellow, uncommonly large. Inner sepals saccate at the base. Petals with the claws exserted. Filaments very broad, flat. Siliques 2–3 inches long, somewhat curved upwards and outwards, scarcely a line wide. Style scarcely any: stigma pubescent." *Nutt.*

16. PACHYPODIUM. *Nutt. mss.*

"Silique somewhat terete, elongated, torulose, on a short thick stipe. Seeds in a single series, oblong, scarcely margined. Cotyledons obliquely incumbent. Calyx nearly erect, equal at the base. Glands 4 at the base of the stamens. Petals narrow, on very long claws.—Annual or biennial, generally tall plants, with the siliques crowded and almost corymbose. Flowers pale violet or rose-color. Leaves entire or laciniate."

1. *P. laciniatum* (Nutt.! mss.): glabrous; leaves all petioled, laciniate-pinnatifid; flowers on spreading pedicels; petals linear, 3 times as long as the calyx; stipe very short; siliques tapering at the summit.—Macropodium laciniatum, *Hook.! bot. misc.* 1. *p.* 341. *t.* 68, *& fl. Bor.-Am.* 1. *p.* 43.

Rocky places beneath cliffs on the Wallawallah and Oregon Rivers, *Douglas! Nuttall!*—Stem erect, 1–3 feet high, branching. Leaves attenuated into a petiole; laciniæ spreading, entire or toothed. Raceme strict, dense: pedicels about 2 lines long. Sepals oblong. Petals very narrow, pale red or almost white. Anthers linear. Siliques an inch and a half long, slender, much crowded at the summit of the peduncles, tapering into a slender style: stigma small, simple: stipe less than a line in length. Radicle lying near the edge of one of the cotyledons, but truly incumbent.—Very distinct from Macropodium in the very short stipe of the silique, and in the incumbent cotyledons.

2. *P. integrifolium* (Nutt.! mss.): "leaves entire; radical ones petioled, oblong-elliptical; cauline lanceolate-oblong, sessile; uppermost nearly linear; stem fastigiately branched; flowers almost corymbose, crowded; petals spatulate-obovate; pedicels twice as long as the calyx; stipe short, but distinct; silique abruptly pointed.

"Elevated plains of the Rocky Mountains, towards the Oregon, as far as Wallawallah.—② Stem terete, smooth, 3–5-feet high, attenuated upward, and sending out numerous branches toward the summit. Flowers pale rose-color. Pedicels about half an inch long, almost horizontal. Sepals membranaceous, oblong. Stamens exserted. Claws of the petals extending beyond the calyx. Siliques an inch in length, contracted between the seeds, nearly terete; the stipe nearly a line long." *Nutt.*—Seeds as broad as the cell; the radicle dorsal, lying midway between the middle and the edge of one of the cotyledons. Septum with a broad longitudinal nerve.

3. *P. sagittatum* (Nutt.! mss.): leaves entire; the cauline ones lanceolate, sagittate, clasping; stipe almost wanting; petals obovate, the limb as long as the claw; silique abruptly pointed, nearly erect; raceme elongated in fruit.

"Plains on the west side of the Rocky Mountains.—② About 2 feet high, sparingly branched. Leaves somewhat glaucous, radical ones small and spatulate. Flowers pale reddish-white. Sepals broadly ovate. Petals nearly twice as long as the calyx, strongly veined. Pedicels of the fruit nearly half an inch long. Siliques an inch and a quarter in length, rather broadly linear, somewhat incurved." *Nutt.*—Seeds as broad as the cell; the radicle dorsal and almost medial.—This species is hardly a congener with the preceding. It may belong to Sisymbrium § Cardaminopsis.

17. STANLEYA. *Nutt. gen.* 2. *p.* 71; *DC. syst.* 2. *p.* 511.

Silique nearly terete, slender, supported on a long stipe. "Seeds oblong, somewhat terete. Cotyledons oblong-linear." *DC.* Calyx colored, spreading. Petals erect, linear or spatulate; claws exceeding the lamina in length, and connivent into a tetrahedral tube. Stamens somewhat equal: anthers linear.—Glabrous and glaucous perennial herbs. Leaves lyrately pinnatifid or undivided. Flowers yellow, in long racemes.

1. *S. pinnatifida* (Nutt.): leaves thickish, interruptedly lyrate-pinnatifid; lobes somewhat lanceolate, entire or with 1–2 large teeth.—*Nutt.! gen.* 2. *p.* 71; *DC. syst.* 2. *p.* 512. Cleome pinnatifida, *Pursh, fl.* 2. *p.* 739.

Rocks on the upper part of the Missouri, and near the head-waters of Lewis's River, *Nuttall!* May.—Stems 2–3 feet high, often several from one root, decumbent at the base. Leaves large, sometimes with a very minute pubescence on the under side, deeply pinnatifid. Flowers in a crowded raceme, very showy: pedicels about half an inch long, erect-spreading. Calyx linear, pale orange-yellow. Petals sulphur-yellow, the claw long and very narrow, pubescent internally; lamina linear-oblong, about half the length of the claw. Filaments very long and slender, pubescent below, with a glandular enlargement at the base: anthers at length revolute. "Silique an inch or more in length; the slender stipe nearly an inch long." *Nutt.*—We have not had an opportunity of examining the ripe siliques of this very interesting plant; neither were they found by Mr. Nuttall, either in this or any of the following species, during his recent journey across the continent.

2. *S. integrifolia* (James): leaves thick, ovate-oblong, entire, attenuate at each end; stipe as long as the pedicel.—*James! in Long's exped.* 2. *p.* 17.

Sandstone ridges at the base of the Rocky Mountains, *Dr. James!*—Stem simple. Leaves 5–6 inches long and 2–3 wide, prominently veined, undulate. Sepals deep yellow, spatulate-oblong. Petals yellow, spatulate-obovate; claws very thick. Filaments recurved-spreading. Ovary flattened contrary to the septum; the edges of the septum prominent. Style none.

3. *S. heterophylla* (Nutt.! mss.): "stem erect, lower leaves lyrately pinnate, somewhat pubescent beneath; terminal segment much larger, ovate-lanceolate, somewhat serrate; upper leaves lanceolate, entire; lamina of the petals longer than the claws.

"Rocky situations near Lewis's River, in the Rocky Mountains.—A more humble species than S. laciniata, which it resembles in the color of the flowers. Under surface of the leaves pubescent with very short and somewhat stellate hairs."—*Nutt.*

4. *S. viridiflora* (Nutt. mss.): "erect, glabrous; leaves cuneate-obovate, acute, entire; the radical ones with a few runcinate teeth towards the base; petals linear, and, as well as the calyx, herbaceous.

"Bare shelving hills on Ham's Fork of the Colorado of the West, and in other parts of the Rocky Mountains, towards the sources of Lewis's River; also on the head waters of the Platte. July–Aug.—Root very stout and cylindrical, penetrating deeply into the earth; the taste bitter and nauseous. Stem simple, 3–4 feet high. Radical leaves clustered, about a span long, occasionally almost pinnatifid at the base; cauline ones entire, rapidly diminishing in size upward, so that the superior part of the stem is naked. Raceme very long (sometimes 2 feet in length), crowded with flowers. Calyx and corolla greenish-yellow, and not showy. Sepals long and linear. Petals linear; the lamina scarcely longer than the claw. Anthers very long and linear. Immature fruit smooth; the pedicel about half an inch long: stipe about an inch in length, nearly as long as the silique." *Nutt.*

18. WAREA. *Nutt. in jour. acad. Philad.* 7. *p.* 83.

Silique compressed, slender and elongated, supported on a long stipe. Sepals colored, ligulate or spatulate. Petals spreading or reflexed; claws very slender, longer than the lamina. Stamens somewhat equal. Glands 6 at the base of the stamens.—Annual glabrous plants. Leaves entire. Flowers and siliques in umbelliform racemes, purple or white: siliques pendulous, curved. [illegible]

1. *W. amplexifolia* (Nutt.): leaves oblong-ovate, partly clasping; siliques ancipital.—*Nutt.! l. c. t.* 10. Stanleya amplexifolia, *Nutt. in Sill. jour.* 5. *p.* 297: *DC. prodr.* 1. *p.* 200.

East Florida, *Mr. Ware;* Middle Florida, *Dr. Chapman!*—Stem 1–3 feet or more in height, fastigiately branched above. Lower leaves not seen; cauline ½ an inch to an inch in length, rather acute. Racemes scarcely half an inch long; the flowers much crowded and almost verticillate, showy. Pedicels spreading, and at length recurved, very slender. Calyx nearly equal at the base: sepals purplish, narrow, a little dilated upward. Petals rather pale purple: limb nearly orbicular, undulate; claw one-third longer than the limb, glandularly roughened towards the base. Stamens much exserted; the filaments capillary and glabrous: anthers linear-oblong. Ovary linear: stigma sessile. Stipe of the fruit nearly capillary, purplish, about three-fourths of an inch long; siliques 1½ inch long and less than a line in width, somewhat acute. Seeds (immature) oblong, in a single series: funiculi slender, free.

2. *W. cuneifolia* (Nutt.): leaves nearly sessile, rather thick, oblong, obtuse, attenuate at the base; siliques with the valves somewhat convex.—*Nutt.! in jour. acad. Philad.* 7. *p.* 84. Cleome cuneifolia, *Muhl. cat. p.* 64; *Ell. sk.* 3 *p.* 150. Stanleya gracilis, *DC. prodr.* 1. *p.* 200.

Sand hills, Georgia, *Le Conte! Baldwin!* Middle Florida, *Dr. Alexander!*—Stem 1–3 feet high, fastigiately branched above. Leaves ½–1 inch long, the uppermost ones oblong-linear. Racemes as in the preceding species. Sepals white, spatulate. Petals white; the claws nearly twice as long as the obovate lamina, roughened. Silique about an inch and three-quarters long; the stipe about half an inch in length. Seeds linear-oblong, not margined, in a single series: radicle dorsal and nearly medial. Cotyledons oblong. Septum opaque, without a central nerve; the tubuli straight and ascending, slightly reticulated.

TRIBE III. BRASSICEÆ. *DC.*

Silique dehiscent: septum linear. Style often enlarged and with a seminiferous cell at the base. Seeds for the most part globose. Cotyledons incumbent, conduplicate or longitudinally plicate, with the radical lying in the sinus (O>>).

19. SINAPIS. *Linn.; DC. syst.* 2. *p.* 607.

Silique somewhat terete; valves nerved. Style short, acute. Seeds subglobose, in a single series. Calyx spreading.—Biennial or annual (rarely perennial) herbs. Leaves usually lyrate, incised or pinnatifid. Flowers yellow, in elongated racemes.—*Mustard.*

1. *S. nigra* (Linn.): siliques appressed, glabrous, somewhat 4-sided; style short (not rostrate); lower leaves lyrate, uppes ones lanceolate, entire. —*DC. prodr.* 1. *p.* 218; *Eng. bot. t.* 969; *Darlingt. fl. Cest. p.* 390.
Fields and waste places. June–Aug. Introduced—① Lower leaves large, scabrous; cauline ones glabrous. Sepals yellow. Petals obovate, unguiculate. Silique about three-fourths of an inch in length, pointed with the short and slender 4-sided style.—*Black Mustard.*

2. *S. arvensis* (Linn.): siliques glabrous, many angled, torose, about three times the length of the slender somewhat ancipital style; stem and leaves more or less hairy.—*DC. prodr.* 1. *p.* 219; *Eng. bot. t.* 1748.
Western and Northern parts of the State of New York! Lower Canada, *Mrs. Percival!* Introduced. June–Aug.—① Plant 2–3 feet high. Lower leaves large, somewhat lyrately pinnatifid: upper ones oblong-ovate: all irregularly repand-toothed. Flowers bright yellow. Siliques somewhat spreading, 1½ inch long; beak nearly as broad as the silique. Seeds large and black.

2. *Siliculosæ.*

TRIBE IV. SELENIEÆ.

Silicle dehiscent: septum broad and membranaceous. Seeds inverted! (i. e. with the radicle ascending, and next the placentæ.) Cotyledons plane, accumbent (or nearly so) parallel with the septum.

20. SELENIA. *Nutt. in jour. acad. Philad.* 5. *p.* 132. *t.* 6.

Silicle broadly oval, acute at the base, margined; valves reticulated, somewhat inflated: septum sometimes incomplete; areolæ transverse. Seeds 4–6 in each cell, orbicular, with a broad and thin cartilaginous border: funiculi free. Radicle very short. Calyx nearly equal at the base, colored, spreading. Glands 10. Petals erect. Stamens toothless. Style elongated.—An annual herb. Leaves pinnately parted. Flowers yellow, in leafy racemes.

S. aurea (Nutt.! l. c.)
β. septum nearly wanting.

Wet prairies, Arkansas, *Nuttall! Dr. Pitcher*. *β*. Near St. Augustine, Texas, *Dr. Leavenworth!* March–April.—Stem 4–8 inches high, branching from the base, 3-sided. Leaves pinnatifid, the radical ones somewhat rosulate, with the segments more or less toothed. Raceme at first corymbose, but afterwards elongated into a leafy raceme; the pedicels with a foliaceous bract at the base of each, or rather axillary, the leaves gradually diminishing in size upward. Flowers about half an inch in diameter, golden yellow, fragrant. Sepals linear-oblong, yellow. Petals spatulate, entire, nearly twice as long as the calyx. Glands 8 by pairs at the base of the sepals, and 2 (emarginate) at the base of the shorter stamens. Ovary linear-oblong, flat: style ensiform: stigma capitate. Silicle 5–6 lines long and 3–4 broad, (in *β*. one-third larger), abruptly acuminated with the persistent style: valves very thin, reticulated with slightly prominent veins: septum complete in the Arkansas plant, a mere narrow border in *β*., the central part being entirely wanting; areolæ linear. Seeds in a double series, exactly orbicular, with a notch at the hilum, dotted; the border thin, but rigid. Radicle scarcely half as long as the cotyledons, not truly accumbent, but lying on the side of one of the cotyledons, very near its edge.—This remarkable plant resembles the tribe Cremolobeæ of R. Brown (*Oudney*, *p*. 7.) in its inverted or resupinate seeds; but differs in so many respects, as well from that, as from all the tribes of De Candolle, that we have been obliged to give it a place by itself.

TRIBE V. ALYSSINEÆ. *DC.*

Silicle dehiscent; valves plane or convex: septum broadly oval and membranaceous. Seeds compressed, often margined. Cotyledons plane, accumbent (lying next the placentæ), parallel with the septum.

21. VESICARIA. *Lam. ill. t.* 559; *DC. syst.* 2. *p.* 295.

Silicle globose or ovate, inflated; valves hemispherical, membranaceous or somewhat rigid. Seeds several (4–6 in each cell, or by abortion fewer), sometimes margined: funiculi partly adnate to the septum. Petals entire.—Flowers yellow.

§ 1. *Silicle globose, membranaceous, inflated.*—Vesicariana, *DC.*

1. *V. arctica* (Richards.): canescent with a stellate pubescence; radical leaves crowded, spatulate, mostly entire, obtuse; cauline ones few, linear; style slender, about half the length of the globose silicle.—*Richards. app. Frankl. journ. ed.* 2. *p.* 26; *Hook.! fl. Bor.-Am.* 1. *p.* 48.

α. flowers larger; silicles glabrous [or minutely pubescent]. *Hook.*—V. arctica, *Richards.; DC. prodr.* 1. *p.* 159. Alyssum arcticum, *Fl. Dan. t.* 1520.

β. flowers smaller; silicles [densely] pubescent. *Hook.*—V. arctica, *Hook. bot. mag. t.* 2882. V. arenosa, *Richards. l. c.*

British America, from Canada! to the Arctic Regions! Island of Anticosti, *Mr. Shepherd!* April–May.—♃ Stem 3–8 inches high; the neck marked with the vestiges of former leaves. Pedicels 4–6 lines long. Silicle somewhat ovate-globose, as large as a small pea. Style filiform: stigma capitate, distinct. Seeds 4–6 in each cell, roundish, without a margin. Funiculi adnate to the septum towards the base.

2. *V. Ludoviciana* (DC.): canescent with a stellate pubescence; radical leaves spatulate, entire, obtuse; cauline linear; style slender, longer than the ovary, and nearly as long as the obovate-globose silicle.—*DC. syst.* 2. *p.* 297. Alyssum Ludovicianum, *Nutt.! gen.* 2. *p* 63. Myagrum argenteum, *Pursh, fl.* 2. *p.* 434.

Rocky hills of the Missouri and Platte, *Nuttall*, *Dr. James!* N. W. Coast, *Douglas.* April–June.—♃ Stem 6–8 inches high, simple, or somewhat branched above. Leaves about an inch long. Flowers golden-yellow. Petals obovate. Silicle smaller than in the preceding species, nearly smooth when old.

3. *V. grandiflora* (Hook); canescent with a stellate pubescence; leaves sessile, cuneate-oblong, sinuately toothed; silicle globose, glabrous; style about two-thirds the length of the silicle; petals obcordate, twice as long as the calyx; stamens thickened at the base.—*Hook. bot. mag. t.* 3464; *D. Don in Brit. fl. gard.* (*ser.* 2.) *t.* 401. 4 /

β. pallida: stem sparingly pubescent; leaves narrowed at the base, rather coarsely toothed; flowers almost white; silicle globose.

Texas, *Drummond!* *β.* Small prairies near St. Augustine, Texas, *Dr. Leavenworth!*—① Stem slender, decumbent, much branched, about a foot long. Leaves an inch in length. Calyx copiously hairy: sepals elliptical-oblong. Ovary spherical, scarcely stipulate; septum veinless: ovules 6 in each cell. *D. Don.*—We do not recognise this species among our Texan specimens collected by Drummond, kindly sent us by Sir William Hooker; but our var. *β.* agrees so nearly with the description and figure of Don, that we cannot regard it as specifically distinct.

4. *V. repanda* (Nutt.! mss.): stem minutely and sparingly pubescent, decumbent; leaves linear-oblong or nearly linear, almost glabrous, narrowed at the base, repand, obtuse; silicle obovate-globose, on a short stipe; style about two-thirds as long as the silicle; stigma capitate; petals obovate, twice the length of the calyx; filaments subulate.

Banks of the Red River, Arkansas, *Dr. Pitcher!*—Stem a foot or more in length, branching from the base, rather stout and angular, the upper part sparingly pubescent. Leaves 1½–2½ inches long; the upper ones slightly repand-denticulate, with a few minute appressed stellate hairs on both surfaces. Pedicels an inch long, spreading. Sepals linear-oblong. Petals 3–4 lines long, with distinct claws. Ovary obovate-oblong: each cell with 6–8 ovules. Silicle 2 lines long, on a distinct pedicel: style rather slender: stigma conspicuous.

5. *V. angustifolia* (Nutt.! mss.): canescently and stellately pubescent: radical leaves lyrately pinnatifid or repandly toothed, oblong, attenuated at the base; cauline linear, entire, or repand; silicle globose, glabrous, nearly sessile; style filiform, rather shorter than the silicle; petals obovate-oblong, twice the length of the ovate sepals; filaments subulate, dilated at the base.

Prairies of Arkansas and Red River, *Nuttall! Dr. Leavenworth!* April.—① Stems several from one root, about a foot high. Radical leaves tapering at the base into a long petiole; cauline ones about a line wide. Raceme not much elongated in fruit. Seeds mostly abortive, few in each cell: funiculi adhering to the septum at the base.

6. *V. Nuttallii:* somewhat pubescent, branched from the base and procumbent; leaves lanceolate-oblong, obtusely repand-dentate or almost entire; silicle pyriform-subglobose, somewhat stipitate, glabrous; style two-thirds as long as the silicle; petals obovate; filaments dilated at the base.

Prairies of Red River, Arkansas, *Nuttall! Dr. Leavenworth!*—① Stem 12–18 inches long. Leaves an inch or more in length, narrowed at the base. Racemes much elongated in fruit: pedicels nearly an inch long, spreading or somewhat recurved. Flowers bright yellow. Silicle 3 lines long, a little constricted near the base, and with a circular depression at the insertion of the stipe. Seeds 4 in each cell (ovules 6–8), not margined: funiculi partly adhering.

7. *V. brevistyla:* densely and stellately pubescent; radical leaves lyrately pinnatifid or toothed; cauline ones oblong, sessile, dentate-serrate; silicle globose, sessile, glabrous: style rather thick, one-third the length of the silicle; seeds margined, about 6 in each cell; petals broadly obovate; filaments dilated at the base.

Texas, *Drummond!*—① Stems numerous from one root, about a foot long. Radical leaves 2–3 inches long; cauline about three-fourths of an inch in length, closely sessile and but little dilated at the base. Petals 4–5 lines long, with a short claw. Filaments short, with a broad ovate dilatation at the base. Silicle about 2½ lines in diameter.

8. *V. gracilis.* (Hook.?): somewhat scabrous with sparse stellate hairs; leaves oblong and linear-oblong, entire or remotely denticulate; silicle globose, stipitate, shorter than the style, glabrous; seeds 2–3 in each cell, not margined; petals obovate; filaments subulate.—*Hook. bot. mag. t.* 3464? (in a note.)

Texas, *Drummond!* — ① About a span high, erect; several slender stems from one root. Radical leaves petioled; cauline sessile, narrowed at the base. Silicle about a line and a half in length; style filiform; stigma minute.—Hooker (l. c.) has noticed two Texan species, without describing them; but from the appropriateness of the name, there can be little doubt that the plant here described is his V. gracilis.

9. *V. Shortii:* decumbent, somewhat pubescent with stellate hairs; leaves elliptical, sessile, entire, or slightly repand; silicle globose, with scarcely any stipe; style more than twice as long as the silicle; seeds 2 in each cell, not margined; petals obovate; filaments dilated at the base.

Banks of Elkhorn Creek, near Frankfort, Kentucky, *Short!*—① Stem about a span long, slender. Leaves ½–1 inch long, narrowed at each end. Flowers bright yellow: pedicels half an inch in length. Silicles scarcely a line in diameter, stellately pubescent. Seeds suspended from near the summit of the cell.—Easily distinguished by its small silicle and very long style.

§ 2. *Silicle ovate; valves convex, rather rigid.*—Alyssoides, *DC.*

9. *V. alpina* (Nutt.! mss.): "dwarf and cæspitose, canescent with a dense stellate pubescence; leaves linear-spatulate, entire; calyx equal at the base, deciduous; silicle inflated below, compressed at the summit, shorter than the slender style.

"High hills of the Rocky Mountain range, toward the sources of the Platte.—♃ Main stem short and thick, throwing up numerous stalks 2–4 inches high. Leaves nearly an inch long, and about a line in width." *Nutt.* —Flowers in short corymbose racemes, large for the size of the plant. Petals oblong-spatulate, one-half longer than the calyx. Filaments subulate, with a callous enlargement at the base of each: anthers ovate. Silicles acute, densely clothed with stellate hairs: septum usually with an oval hole in the centre: cells 4-seeded. Seeds not margined.

§ 3. *Silicle didymous, much inflated, membranaceous.*—Physaria, *Nutt. mss.*

10. *V. didymocarpa* (Hook.): canescent with a stellate pubescence; radical leaves broadly obovate-spatulate; cauline ones spatulate-lanceolate,

mostly entire; silicles large, inflated, didymous; seeds not margined.—*Hook. fl. Bor.-Am.* 1. *p.* 49. *t.* 16.

In deep sand on the Rocky Mountains, lat. 52°-57, *Drummond!* and on the Argillite hills of the Platte, from Scott's Bluffs to the mountains, *Nuttall!* Oregon, *Douglas*, *Nuttall.*—♃ Root fusiform. Stems branching from the base, diffuse, 3-4 inches high. Flowers showy, corymbed. Petals obovate-spatulate, nearly twice as long as the calyx. Silicle conspicuously didymous; each cell of the size of a large pea: septum lanceolate!

22. ALYSSUM. *Linn.* (in part); *DC. syst.* 2. *p.* 301.

Silicle orbicular or elliptical; valves plane or convex in the centre. Seeds 2-4 in each cell, compressed, sometimes membranaceously margined. Calyx equal at the base. Petals entire. A part of the stamens usually toothed.

1. *A. hyperboreum* (Linn.): stems herbaceous, cæspitose; leaves elliptical, coarsely and acutely toothed, somewhat hirsute; silicles elliptical; the longer stamens toothed. *DC.*—*Pursh, fl.* 2. *p.* 434; *DC. prodr.* 1. *p.* 164. Draba hyperborea, *Desv.*

N. W. Coast.—A doubtful native of America.

23. DRABA. *Linn.; R. Br. in hort. Kew.* 4. *p.* 91.

Draba & Erophila, *DC.*

Silicle oval or oblong; valves plane or convex. Seeds many, not margined. Calyx equal. Petals entire or bifid. Stamens all toothless.—Flowers white or yellow.

§ 1. *Petals entire.*—DRABA, DC.

* *Perennial: scapes mostly leafless.*

1. *D. algida* (Adams): flaccid; scapes short, naked, pilose with spreading hairs; leaves oblong, plane, and (with the calyx) pilose with simple hairs; silicles somewhat corymbed, elliptical, glabrous; style very short; flowers yellow. *Hook.*—*DC. prodr* 1. *p.* 167; *Hook. fl. Bor.-Am.* 1. *p.* 50.

γ. *brachycarpa* (DC.): silicle shorter, ovate.—*DC. l. c.*

δ. *breviscapa* (Hook.): scape immersed among the smoothish leaves. *Hook. l. c.*

Sea-coast of Arctic America.—Pedicels always glabrous. Petals obovate, twice the length of the calyx.—Very near D. alpina. *Hook.*

2. *D. alpina* (Linn.): somewhat rigid; scapes naked, mostly somewhat hirsute; leaves spatulate-lanceolate, plane, more or less pilose with branching hairs; petals (yellow) more than twice the length of the calyx; silicles somewhat corymbed, oblong-elliptical; style very short.—*Fl. Dan. t.* 56 (leaves broader than in our plant); *DC. prodr.* 1. *p.* 67; *R. Br.! in Parry's 1st voy. app. p.* 265; *Hook.! fl. Bor.-Am.* 1. *p.* 50.

α. silicles glabrous.—D. alpina, *herb. Linn.* ex *R. Br. l. c.*

β. silicles hairy.—*R. Br. l. c.*

δ. flowers white.—*Hook. l. c.*

Melville Island! Shore of the Arctic Sea! Kotzebue's Sound.—Flowers large, fine yellow, rarely white. Our specimens from Melville Island have the scape and sepals nearly glabrous, and the leaves very sparingly hirsute.

3. *D. glacialis* (Adams): scape naked, stellately pubescent or glabrous; leaves linear-lanceolate, entire, rigid, stellately pubescent; petals (yellow) twice the length of the calyx; silicles racemose, oblong-ovate, the cells 5–6-seeded; style short.—"*Adams, in mem. soc. nat. Mosc.*" *ex DC. prodr.* 1. *p.* 167; *Hook.! fl. Bor.-Am.* 1. *p.* 51.

α. scapes, pedicles, and silicles [nearly] glabrous; flowers pale yellow. *Hook.! l. c.* !

β. scapes and pedicels pubescent; silicles glabrous. *Hook.! l. c.*

γ. scapes, pedicels, and silicles strongly hirsute-pubescent. *Hook.! l. c.*

δ. smaller; scapes numerous and, with the pedicels, glabrous; flowers very pale yellow. *Hook.! l. c.*

ε. smaller; scapes and pedicels glabrous; flowers deep yellow. *Hook. l. c.*

Rocks on the loftiest of the Rocky Mountains, lat. 52°–57°, and on the shores of the Arctic Sea.—Leaves narrow and more rigid than in the preceding species, furnished with a strong midrib. Style short, but distinct.

4. *D. oligosperma* (Hook.): scape naked, slightly pubescent; leaves erect, linear, rigid, ciliate, stellately pubescent on both sides, especially towards the apex; petals (white) twice as long as the slightly hairy calyx; silicles pubescent, racemose, elliptical, rather acute at each end, 4–8-seeded, four times the length of the style. *Hook.! fl. Bor.-Am.* 1. *p.* 51.

β.? *Andina* (Nutt.! mss.): "densely cæspitose; leaves imbricated, linear-oblong; silicle ovate, rather obtuse at the base; cells about 2-seeded."

Mackenzie's River, lat. 68°. β. Summits of lofty hills towards the sources of the Platte, within the Rocky Mountain range. *Nuttall!*—Stems or scapes in α. 3 inches; in β. 2 inches high. Leaves about 3 lines long. Pedicels a little longer than the fruit.—The var. β. differs in its more densely imbricated leaves, as well as in the shorter and fewer-seeded silicles. The flowers have not been seen. It will perhaps prove to be a distinct species.

5. *D. densifolia* (Nutt.! mss.): "densely cæspitose in somewhat globose tufts; leaves closely imbricated, oblong-linear, strongly ciliate, and hirsute with nearly simple hairs; scapes naked, hirsute; silicle ovate, pubescent, with a style about one-third its length; cells mostly 2-seeded.

"On the central chain of the Rocky Mountains towards Lewis's River.—Resembles the preceding, but differs in the pubescence being nearly simple, and in the remarkable density of the foliage." *Nutt.*

6. *D. pauciflora* (R. Brown): scapes and pedicels hairy; leaves lanceolate, entire, hairy (the hairs simple or branched); petals (yellow) spatulate, scarcely exceeding the hirsute calyx. *R. Br. in Parry's* 1*st voy. app. p.* 266; *Hook. fl. Bor.-Am.* 1. *p.* 51.

Melville Island.—A doubtful species: near D. alpina. *R. Brown.*

7. *D. micropetala* (Hook.): scapes and pedicels hairy; leaves broadly lanceolate, veiny, entire, covered with a simple or branched pubescence; petals (white) linear-spatulate, scarcely exceeding the slightly hairy calyx; silicles elliptical, glabrous; stigma sessile, emarginate. *Hook.! in Parry's* 2*d voy. app. p.* 385, *& fl. Bor.-Am.* 1. *p.* 52.

Island of Igloolik, and (β. minor) sea coast of Arctic America.—Habit of D. alpina. The flowers resemble those of D. pauciflora, but are white.

8. *D. muricella* (Wahl.): scape naked, velvety; leaves oblong, entire, canescent with a soft stellate pubescence; silicles oblong-lanceolate, glabrous (flowers white.) *DC.—Wahl. fl. Lapp. p.* 178. *t.* 11. *f.* 2; *DC. prodr.* 1. *p.* 168; *Hook. fl. Bor.-Am.* 1. *p.* 52. D. nivalis, *Liljeblad.; Pursh, fl.* 2. *p.* 433?

Labrador and Arctic America.—Not well distinguished from D. nivalis and D. hirta. *Hook.*

9. *D. oblongata* (R. Brown): scapes naked, somewhat floccosely hirsute; leaves cæspitose, oblong-linear, entire, ciliate and velvety; silicles oblong-elliptical, velvety. *DC.—R. Br. in Ross's voy. app.* (without descr.); *DC. prodr.* 1. *p.* 168; *Hook. fl. Bor.-Am.* 1. *p.* 52. D. hirta, var. 2. *Hook. in Parry's voy.*

Shores of Arctic America.—Flowers unknown: style very short.

10. *D. corymbosa* (R. Brown): scape naked, minutely hispid; leaves densely cæspitose, oblong, attenuate at the base, ciliate and somewhat hispid; silicles elliptical, corymbose, minutely hispid. *DC.—R. Br. l. c.; DC. prodr.* 1. *p.* 169; *Hook. fl. Bor.-Am.* 1. *p.* 52.

Shores of Arctic America.—Very near D. oblongata and D. rupestris. *R. Brown.*

11. *D. hirta* (Linn.): scape puberulent, often bearing one or two toothed leaves; radical leaves oblong, mostly entire, minutely pubescent; silicles oblong, and, with the pedicels, glabrous; style almost none (flowers white). *DC.—Wahl. fl. Lapp. p.* 175. *t.* 11. *f.* 3; *DC. prodr.* 1. *p.* 169; *Hook. fl. Bor.-Am.* 1. *p.* 52.

β. siliquosa: silicles 9 lines long. *Hook. l. c.*

γ. leaves almost glabrous; scape entirely glabrous. *Hook.! l. c.*

Arctic and Subarctic America! Rocky Mountains; Kotzebue's Sound.—A variable plant, appearing to pass into D. rupestris on the one hand, and into D. incana on the other. *Hook.*

12. *D. rupestris* (R. Brown): scape naked, or with a single leaf, pubescent; leaves oblong-spatulate, ciliate and somewhat hirsute; silicles oblong, pubescent or glabrous; style very short; stigma emarginate (flowers white). *Hook.! fl. Bor.-Am.* 1. *p.* 53.

α. silicles pubescent. *Hook.! l. c.*—D. rupestris, *R. Br. in hort. Kew.* 3. *p.* 91; *DC. prodr.* 1. *p.* 169. D. hirta, *Eng. bot. t.* 1338. D. hirta, var. 4. *Hook. in Parry's 2nd voy. app. p.* 386.

β. silicles glabrous. *Hook.! l. c.*

Rocky Mountains, lat. 52°–57°.—Not well distinguished from D. hirta. The var. *β.* Hooker supposes to be identical with D. nivalis, *Willd.* If so, as is not improbable, that name being the older by several years, must be adopted instead of the one here employed.

13. *D. Lapponica* (Willd.): scapes naked, glabrous; leaves lanceolate, entire, slightly hairy; silicles ovate-lanceolate, and (with the pedicels) glabrous. *DC. prodr.* 1. *p.* 169; *R. Br.! in Parry's 1st voy. app. p.* 266; *Hook. fl. Bor.-Am.* 1. *p.* 53. D. hirta, var. 3. *Hook. in Parry's voy. l. c.* D. androsacea, *Wahl. fl. Lapp. p.* 174. *t.* 11. *f.* 5.

Melville Island!—Flowers white.

14. *D. stellata* (Jacq.): scape with a single leaf, pubescent; leaves oblong-oval, tomentose with a short stellate pubescence; pedicels puberulent; siliques oblong. *DC.*—"*Jacq. hort. Vindob. p.* 113, *Obs. n.* 54. *t.* 4. *f.* 3."; *DC. prodr.* 1. *p.* 169; *Deless. ic.* 2. *t.* 46. *f. B; Hook. fl. Bor.-Am.* 1. *p.* 53. D. hirta, *Jacq.*

β. hebecarpa: silicles entirely clothed with a velvety pubescence. *DC. l. c.; Hook. l. c.*

Unalaschka and Kotzebue's Sound. *β.* Arctic America!—Lower leaves lanceolate-obovate, ciliate. Flowers white.

15. *D. lævipes* (DC.): scapes naked or with a single leaf, pubescent; leaves ovate, tomentose with a short woolly pubescence; silicles long and

linear, and, with the pedicels, glabrous. *DC. syst.* 2. *p.* 346; *Deless. ic.* 2. *t.* 46. *f. A; Hook. fl. Bor.-Am.* 1. *p.* 53.

Rocky Mountains, lat. 52°–57°.—Flowers white. Silicles 6 lines long and scarcely one line wide. *DC.*

! 16. *D. crassifolia* (Graham): scape naked or with a single leaf; calyx and pedicels glabrous; leaves linear-spatulate, somewhat fleshy, ciliate with simple hairs; petals a little exceeding the calyx, retuse; silicles ovate-elliptical, glabrous.—*Graham, in Edinb. phil. jour.* 1829. *p.* 182; *Hook.! fl. Bor.-Am.* 1. *p.* 54.

α. petals white. *Hook. l. c.*

β. petals pale yellow. *Hook. l. c.*

Summits of the Rocky Mountains, lat 52°–57°, *Drummond!* and about lat. 41°, *Nuttall.*—Scapes 1–2 inches high: flowers small. Silicles glabrous. *Hook.* Leaves lanceolate-linear, entire or somewhat serrate. *Nutt.*

* * *Perennial: stems leafy.*

17. *D.? lævigata* (Cham. & Schlecht.): stem leafy, simple, glabrous, strict; radical and inferior cauline leaves petioled, ovate, attenuate at the base, somewhat fleshy, the margin obscurely ciliate; silicles oblong-lanceolate, glabrous, 4–6 times as long as the pedicels. *Cham. & Schlecht. in Linnæa,* 1. *p.* 25; *Hook. fl. Bor.-Am.* 1. *p.* 54.

Island of St. Lawrence, *Chamisso.*—Root thick, descending. Radical leaves few, (not in a rosulate cluster) with the petiole 1½–2 inches long.—Stems several, 3–4 inches high in flower, elongated in fruit. Flowers white. Silicles 7–8 lines long, and 3-4ths of a line broad: style very short. Seeds not seen. *Cham. & Schlecht.*—Hooker has placed this in his second section, including the annual and biennial species; but the authors above quoted state it to be perennial.

! 18. *D. ramosissima* (Desv.): puberulent; stems numerous; leaves linear-lanceolate, remotely and sharply laciniate-toothed; racemes corymbosely paniculate; silicles lanceolate, attenuate at each end, pubescent; style one-fourth the length of the silicle.—*Desv. jour. bot.* 3. *p.* 168; *DC. syst.* 2. *p.* 355; *Gray! in ann. lyc. New-York,* 3. *p.* 224. D. arabisans, *Pursh! fl.* 2. *p.* 434. (not of *Michx.*) D. dentata, *Hook. & Arn.! in jour. bot.* 1. *p.* 192 (without descr.); *Hook.! ic.* 1. *t.* 31. Alyssum dentatum, *Nutt.! gen.* 2. *p.* 63.

On rocks, Harper's Ferry, Virginia! and Cliffs of Kentucky River, *Short!* April–May.—Rhizoma creeping, branching and throwing up tufts of stems, which are about a span high. Pubescence simple and stellate (mostly with 4 rays). Radical leaves rosulate, crowded, with a long cuneiform base; cauline ones sessile, almost pectinately toothed; the teeth 2–3 on each side. Racemes forming a large spreading panicle: flowers white. Pedicels erect-spreading, about as long as the somewhat contorted silicle. Seeds 4–7 in each cell.—A very distinct species, with much the habit of D. arabisans.

19. *D. arabisans* (Michx.): slightly and stellately pubescent; stem leafy, simple or branching from the base, leaves acutely toothed, radical ones cuneate-lanceolate, the cauline oblong; silicles glabrous, lanceolate-oblong, acuminate with a very short but distinct style; petals (white) about twice as long as the sepals.—*Michx.! fl.* 2. *p.* 28; *DC. prodr.* 1. *p.* 170; *Hook. fl. Bor.-Am.* 1. *p.* 55. D. incana *β.* glabriuscula, *Gray! in ann. lyc. New-York,* 3. *p.* 223.

β. leaves nearly entire, radical ones rather obtuse; style almost wanting.—D. Longii, *herb. Schwein.!; Nutt.! mss.*

Rocks, Lake Champlain, *Michaux!* and on the borders of small lakes in the northern part of the State of New York! *β.* Fort Gratiot, and N. shore of Lake Superior, *Dr. Pitcher!*—Stems many from a single root, 6–8 inches high. Radical leaves numerous, forming a rosulate tuft, 1–1¼ inch long, acute, much attenuated at the base, furnished with 2 (rarely more) very acute spreading teeth on each side, sometimes entire; cauline leaves somewhat clasping. Flowers in a short close nearly simple raceme. Petals broadly ovate. Silicle half an inch long, contorted; cells about 10-seeded: lower pedicels nearly as long as the silicle; upper ones shorter, often cohering by pairs nearly or quite to the summit.—Nearly related to D. incana, and also to D. hirta. We have seen in the herbarium of the Academy at Philadelphia, specimens of the var. β.; but the locality is not recorded.

*** *Annual or biennial: stems leafy.*

! 20. *D. incana* (Linn.): stem leafy, simple or branching, clothed with a velvety stellate pubescence; leaves ovate, toothed; silicles oblong, glabrous or pubescent, contorted or straight.

α. cauline leaves ovate, acutely toothed; silicles mostly contorted, glabrous; style very short.—D. incana, *Fl. Dan. t.* 130; *Pursh, fl.* 2. *p.* 434; *Hook. fl. Bor.-Am.* 1. *p.* 54. D. contorta, *Ehrh.; DC. prodr.* 1. *p.* 170.

β. *confusa:* leaves sparingly toothed; silicles pubescent.—D. incana, var. *Linn.* D. confusa, *Ehrh.; DC. prodr. l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 54.

γ. *borealis:* somewhat hirsute; stem-leaves few, ovate; radical ones oblong, attenuate at the base, entire; silicles . . . (ovaries ovate)—D. borealis, *DC. syst.* 2. *p.* 342. (fide *Hook.*)

α. Labrador. β. Arctic America and the Rocky Mountains. γ. Islands of St. Lawrence and Unalaschka.—② and ♃? Stems 6–10 inches high, usually several from one root. Raceme somewhat compound. *Hook.*

21. *D. glabella* (Pursh): slightly and somewhat stellately pubescent; radical leaves oblong-spatulate; cauline ones 2–4, ovate, toothed or entire; petals (white) more than twice as long as the very smooth calyx; silicles. . . *Hook.*—*Pursh, fl.* 2. *p.* 434? ; *Richards. app. Frankl. jour. ed.* 2. *p.* 27; *Hook. fl. Bor.-Am.* 1. *p.* 54.

Margins of alpine rivulets in the Rocky Mountains, between lat. 52°–57°. Hudson's Bay, *Pursh.*—Habit of D. crassifolia, but 3–4 times the size, and the flowers as large as any of the genus. Silicles not seen. *Hook.*

22. *D. Unalaschkiana* (DC.): stem leafy, simple, pubescent; leaves ovate-oblong, entire, pubescent; silicles oblong, minutely hirsute. *DC. syst.* 2. *p.* 380; *Hook. fl. Bor.-Am.* 1. *p.* 55.

Unalaschka.—Petals (white) twice as long as the calyx; lamina obovate, emarginate. *DC.*

! 23. *D. aurea* (Vahl): pubescent; stem erect, leafy; leaves lanceolate or ovate-lanceolate, acute, entire or toothed; corymbs terminal and axillary; silicles oblong-lanceolate, pubescent, 3 times as long as the pedicels; petals (yellow) emarginate; style rather short. *Hook.*—*Fl. Dan. t.* 1460; *DC. prodr.* 1. *p.* 170; *Hook. fl. Bor.-Am.* 1. *p.* 55, *& in bot. mag. t.* 2934.

Rocky Mountains.—Flowers sometimes white. *Hook.*

24. *D. lutea* (Gilib.): pubescent; stem branching, leafy; leaves oval; cauline ones lanceolate, toothed; silicles oblong-elliptical, glabrous, about 30-seeded, one-third the length of the pedicels. *Hook.*—*DC. prodr.* 1. *p.* 171; *Hook. fl. Bor.-Am.* 1. *p.* 55.

β. *longipes* (DC.): pedicels 3–4 times the length of the silicles.—*Hook. l. c.*—D. gracilis, *Graham, in Edinb. phil. jour.* 1828. *p.* 172.

Arctic and Subarctic America! Grassy moist places at the junction of the Wahlamet and the Oregon, *Nuttall!*—Stem 6–15 inches high, very slender, usually simple, but sometimes a little branching from the base: pubescence simple or forked. Flowers very small, yellow: petals about twice as long as the calyx. Silicle 4 lines long, rather obtuse: stigma sessile.—Hooker's reference to Nuttall's Genera is a mistake, as Nuttall has no D. lutea. Not very distinct from the next species.

25. *D. nemoralis* (Ehrh.): pubescent; stem branched; leaves oval; cauline ones lanceolate, toothed; silicles oblong-elliptical, pubescent, nearly 30-seeded, one-third the length of the pedicels. *Hook.—DC. prodr.* 1. *p.* 171; *Hook! fl. Bor.-Am.* 1. *p.* 55.

α. flowers yellow; petals nearly entire. *Hook. l. c.*

β. flowers nearly white; petals emarginate. *Hook. l. c.*

N. W. Coast and Subarctic America! β. Plains of the Rocky Mountains, *Nuttall*; Fort Gratiot, Michigan, *Dr. Pitcher!*—Stem slender, 3–4 inches high, pubescent below, glabrous above. Leaves hirsute. Flowers minute. Pedicels very long. Petals emarginate, longer than the hairy calyx.—Our specimens from Dr. Pitcher have glabrous fruit.

26. *D. muralis* (Linn.): pubescent; stem branching, leafy; leaves broadly ovate; cauline ones cordate, somewhat clasping, strongly toothed; silicles oblong-elliptical (glabrous, *DC.*), about 16-seeded, a little shorter than the pedicels (flowers white). *Hook.—Eng. bot. t.* 192; *DC. prodr.* 1. *p.* 171; *Hook. fl. Bor.-Am.* 1. p. 56.

About Montreal. Petals entire or notched, upon the same plant. *Hook.* —The last three species are in much confusion, which we have not the means of clearing up, and we have therefore very closely followed Hooker, who, however, is far from being satisfied with his own account of them.

27. *D. cuneifolia* (Nutt.): hirsute-pubescent; stem branching below; leaves sparingly toothed; radical ones spatulate-oblong; cauline ones few, oblong-ovate, somewhat attenuate at the base; racemes rather elongated in fruit; silicles oblong-lanceolate, minutely hispid, twice as long as the pedicels; petals (white) emarginate.—*Nutt.! mss. in herb. Hook.*

Grassy places around St. Louis, Missouri; also in Arkansas and West Florida, *Nuttall!* Kentucky, *Short!* March–April.—Very pubescent, the hairs branching. Plant 3–8 inches high; the lower part only clothed with leaves, slender. Radical leaves an inch and a half long, and three-fourths of an inch broad. Flowers rather large: petals nearly three times as long as the calyx. Silicles 6–7 lines long, minutely hispid, especially on the margin, diverging horizontally; cells about 15-seeded: style none.

28. *D. platycarpa:* canescently hirsute with branching hairs; stem branching below, the branches leafy; leaves remotely toothed; radical ones obovate; cauline oblong, closely sessile; racemes elongated in fruit; silicles obovate-oblong, minutely hispid, shorter than the pedicels; petals (white) emarginate.

Texas, *Drummond!*—Stem 3–8 inches high, divergingly branched below. Leaves about an inch long, with 2–3 distinct teeth on each side. Petals broadly obovate; the claw short; limb deeply emarginate. Silicles on spreading pedicels, 3–4 lines long and nearly 2 lines broad, very obtuse; cells 25–30-seeded.

29. *D. brachycarpa* (Nutt. mss.): minutely pubescent, simple or branched; radical leaves roundish-ovate, petioled, cauline oblong or linear, minutely (about 2-) toothed, or entire; racemes many-flowered, strict, elongated in fruit (flowers white); silicles oval, glabrous, about the length of the pedicels; cells 5–6-seeded; style very short; petals entire.—Alyssum bidentatum, *Nutt.! in herb. Hook.*

β. *fastigiata* (Nutt. mss.): more pubescent; stem mostly simple; radical leaves mostly 4-toothed; silicles pubescent.

Plains and open grassy places, near St. Louis, Missouri; and in Arkansas, *Nuttall!* Milledgeville, Georgia, *Dr. Boykin!* Macon, Georgia, *Mr. Loomis!* *β.* Arkansas, *Nuttall!* March–April.—Stem often much branched, leafy. Flowers minute. Silicles about 2½ lines long; valves marked with a median nerve, obscurely veined. Petals obovate, very slightly emarginate.

30. *D. Caroliniana* (Walt.): stem leafy and hispid at the base, naked and smooth above; leaves roundish-ovate, entire, hispid; silicles linear, glabrous, corymbed, longer than the pedicles (flowers white).—*Walt. Car. p.* 174; *Ell. sk.* 2. *p.* 138; *DC. prodr.* 1. *p.* 171. D. hispidula, *Michx.! fl.* 2. *p.* 28; *Pursh! fl.* 2. *p.* 433. Arabis rotundifolia, *Raf. in Amer. month. mag.* 2. *p.* 43.

β. umbellata: silicles elongated, almost umbellate.

Sandy fields, Connecticut! to Georgia! west to Arkansas! *β.* Arkansas, *Dr. Pitcher!* April–June.—Plant 1–3 inches high. Petals oblong, twice as long as the sepals. Silicles 4–6 lines long; cells 20–30-seeded: style almost none.—Petals in the terminal flowers of old racemes very minute, or nearly wanting.

31. *D. micrantha* (Nutt. mss.): "stem leafy and hispid below, naked and smooth above; leaves cuneate-obovate, hispid, entire; silicles linear, minutely hispid, much longer than the pedicels (flowers white).

"Open plains and rocky places about St. Louis, and in Arkansas." *Nuttall.*—Differs from the preceding chiefly in the hispid silicles.

§ 2. *Petals 2-parted.*—Erophila, DC.

32. *D. verna* (Linn.): scapes naked; leaves lanceolate, somewhat toothed; silicles elliptical.—*Eng. bot. t.* 586; *Pursh! fl.* 2. *p.* 433. Erophila Americana & vulgaris, *DC. prodr.* 1. *p.* 173. E. vulgaris, *Hook. fl. Bor.-Am.* 1. *p.* 56.

Fields and hill sides, Canada! to Virginia! March–April.—① Scapes 1–4 inches high, filiform. Flowers minute, white. Silicles on long pedicels: style very short. Seeds numerous.

24. COCHLEARIA. *Tourn.; DC. syst.* 2. *p.* 358.

Silicle ovate-globose or oblong; valves ventricose. Seeds numerous, not bordered. Calyx equal, spreading. Petals 2-parted. Stamens toothless. Style short or none.—Flowers white. Leaves mostly fleshy.

1. *C. oblongifolia* (DC.): silicles roundish, half as long as the pedicels; cauline leaves oblong, entire (or sinuate-toothed), sessile, the uppermost slightly auricled. *DC. syst.* 2. *p.* 263; *Hook. fl. Bor.-Am.* 1 *p.* 56.

N. W. America; Sitcha, *Bongard.*

2. *C. Anglica* (Linn.): silicles globose-elliptical, reticulately veined, half as long as the pedicels; radical leaves petioled, ovate, entire; cauline ones oblong. *DC.*—*Eng. bot. t.* 552; *DC. prodr.* 1. *p.* 173; *Hook. fl. Bor.-Am.* 1. *p.* 57.

Arctic America and Kotzbue's Sound to Oregon.—Septum often fenestrate. *Hook.*

3. *C. fenestrata* (R. Brown): silicles elliptical or oval; valves scarcely veined; septum elliptical-lanceolate, with the axis often fenestrate; radical leaves cordate, entire; cauline ones oblong-spatulate, somewhat toothed. *R. Br.! in Ross's voy. and in Parry's* 1*st voy. app. p.* 266; *DC. prodr.* 1. *p.* 174; *Hook.! fl. Bor.-Am.* 1. *p.* 57.

Shores of the Arctic Sea!—Root fibrous, thickened at the neck, and throwing up several short simple or branching stems. Leaves glabrous. Racemes short and crowded. Silicle apiculate with a very short style. Seeds about 8 in each cell.

4. *C. officinalis* (Linn.): silicles globose-ovate, half as long as the pedicels; radical leaves petioled, cordate; cauline ones ovate, toothed or angled. *DC.—Eng. bot. t.* 551; *DC. prodr.* 1. *p.* 173; *Hook. fl. Bor.-Am.* 1. *p.* 57.
Arctic America, ex *Hook.*—A native also of Europe.

5. *C. Danica* (Linn.): silicles elliptical [or subglobose] as long as the pedicels; leaves all petioled, deltoid. *DC.—Eng. bot. t.* 696; *DC. prodr.* 1. *p.* 173; *Hook. fl. Bor.-Am.* 1. *p.* 57.
Arctic America, ex *Hook.*—A native also of the northern parts of Europe.

6. *C. tridactylites* (DC.): silicles globose-ovate; cauline leaves with a single tooth on each side (as if 3-lobed). *DC. syst.* 2. *p.* 367.
Labrador, *Herb. Banks*, (according to *DC.*) ([illegible])

7. *C. Grœnlandica* (Linn.): silicles ovate, as long as the pedicels; radical leaves petioled, reniform, entire; cauline ones few or none. *DC. prodr.* 1. *p.* 173.
Greenland.—A native also of Norway and Iceland.

8. *C. spathulata* (Schlecht.): stellately pubescent; silicles globose-elliptical; leaves spatulate, coarsely toothed, acute, veined. *Hook.—Schlecht. in herb. Willd. ex DC. syst.* 2. *p.* 369; *Hook. fl. Bor.-Am.* 1. *p.* 57. C. septentrionalis, *DC. prodr.* 1. *t.* 174. Draba grandis, *Langsdorff; DC. syst.* 2. *p.* 355; *Deless. ic.* 2. *t.* 47.
Aleutian Islands, lat. 56°–57.—Septum fenestrate. *DC.*

9. *C. siliquosa* (Schlecht.): silicles oblong-lanceolate, apiculate with the style, half as long as the pedicels; leaves oblong, entire, attenuate at the base, pubescent. *Schlecht. in herb. Willd. ex DC. syst.* 2. *p.* 369; *Hook. fl. Bor.-Am.* 1. *p.* 57.
Rocky places in Unalaschka.—Flowers in dried specimens yellowish. *DC.* —Nearly related to the preceding. *Chamisso.*

TRIBE VI. CAMELINEÆ. *DC.*

Silicle dehiscent, ovate or oblong, compressed parallel to the septum, or turgid; valves plane or convex: septum elliptical or ovate, sometimes incomplete or none. Cotyledons plane, incumbent, contrary to (i. e. their margins looking towards) the septum.

25. CAMELINA. *Crantz; DC. syst.* 2. *p.* 514.

Silicle obovate or somewhat globose; valves ventricose, dehiscing with a part of the style; cells many-seeded. Style filiform. Seeds oblong, not bordered.

1. *C. sativa* (Crantz): silicles obovate-pyriform; style rather long; stigma simple; leaves lanceolate, sagittate, nearly entire.—*DC. prodr.* 1. *p.* 201; *Darlingt. fl. Cest. p.* 379. Myagrum sativum, *Linn.* Alyssum sativum, *Smith, Eng. bot. t.* 1254.
Fields and cultivated grounds! May–June. Introduced.—① Stem 1½–3 feet high, paniculate at the summit. Leaves usually roughish-pubescent. Flowers small, yellow.

2. *C. barbareæfolia* (DC.): silicles globose; stigma capitate; leaves oblong, pinnatifid, obtusely auricled at the base; stem villous below. *DC. syst.* 2. *p.* 516; *Deless. ic.* 2. *t.* 70; *Cham. & Schlecht. in Linnæa*, 1. *p.* 29; *Hook. fl. Bor.-Am.* 1. *p.* 65.
Bay of Eschscholtz, N. W. America, *Chamisso.*—♃ Habit of Nasturtium amphibium.

26. BRAYA. *Sternb. & Hoppe; DC. syst.; Hook. exot. fl.* 1. *t.* 121.

Silicle (or rather silique) oblong, terete, torulose. Style short or none. Septum cleft in the middle. Seeds about 6 in each cell. Calyx equal at the base, erect.—Perennial herbs, with thick long descending roots. Leaves mostly radical, narrow. Scapes short. Flowers small, white or pale purple.

We follow Hooker in placing this and the following genera in Camelineæ; but are not satisfied that this is their proper station.

1. *B. alpina* (Sternb. & Hoppe): leaves glabrous; scapes sparsely leafy; racemes capitate in fruit. *Hook.*—*DC. prodr.* 1. *p.* 141; *Deless. ic.* 2. *t.* 22; *Hook. fl. Bor.-Am.* 1. *p.* 65.
β. Americana (Hook. l. c.): style rather long, slender.
Rocky Mountains, lat. 52°–57°. (var. *β.*)—Leaves linear-spatulate, entire.

2. *B. glabella* (Richards.): leaves glabrous; scapes mostly leafy; racemes elongated in fruit, loose. *Hook.*—*Richards. app. Frankl. journ. p.* 25; *DC. prodr.* 1. *p.* 141; *Hook. fl. Bor.-Am.* 1. *p.* 65.
Arctic America, *Richardson.*—♃ Scape sometimes hairy. Flowers mostly white. *Hook.*

3. *B.? pilosa* (Hook.): leaves pilose; scapes leafless; racemes elongated in fruit. *Hook.! fl. Bor.-Am.* 1. *p.* 65. *t.* 17.
Arctic Sea at the mouth of Mackenzie River, *Richardson!*—♃ Leaves much crowded, linear-lanceolate. Scape 2–3 inches high. Silicle (immature) oval, hairy; cells 8-seeded. Mature fruit not seen.—Probably a distinct genus.

27. PLATYPETALUM. *R. Br. in Parry's 1st voy. app. p.* 266.

Silicle oval, compressed, many-seeded; valves convex. Style very short. Calyx somewhat spreading. Limb of the petals dilated.—Habit of Braya, but differing in the fruit.

1. *P. purpurascens* (R. Brown): stigma with 2 spreading lobes; style distinct; scapes naked or with a single leaf; silicles nearly glabrous. *R. Br. l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 66. *t.* 23. Braya arctica, *Hook. in Parry's 2nd voy. app. p.* 387.
Arctic America! from Mackenzie River to Spitzbergen.—♃ Scapes several from one root, in flower scarcely an inch high. Leaves lanceolate, mostly entire. Petals white, tinged with purple (*R. Br.*): lamina broader than long, very obtuse. Silicles in long racemes, about one-third of an inch in length; cells about 8-seeded. Septum complete, thin: areolæ transverse. Seeds not margined.

2. *P. dubium* (R. Brown): stigma undivided, nearly sessile; silicles and scapes pubescent. *R. Br. l. c.*
Melville Island.—Flowers not seen. *R. Br.*

28. EUTREMA. *R. Br. in Parry's 1st voy. app. p.* 267; *Hook. fl. Bor.-Am.* 1. *p.* 67. *t.* 24.

Silicle (or rather silique) ancipital; valves carinate: septum (in E. Edwardsii) incomplete. Seeds not margined.—Perennial herbs, with the habit of Braya and Platypetalum.

1. *E. Edwardsii* (R. Brown): silicles lanceolate; septum obliterated; leaves ovate-lanceolate, on long petioles. *Hook. l. c.*—*R. Br. l.c. t. A.*
Arctic America!—Stem 2–4 inches high (in fruit sometimes a foot high *Hook.*), simple, few-leaved. Leaves entire. Petals white. Silicle 3–4 lines long; cells about 4-seeded: style almost none: stigma somewhat lobed. *R. Br.*

2. *E. arenicola* (Richards.): silicles broadly linear; septum complete; leaves spatulate-oblong. *Hook. fl. Bor.-Am.* 1. *p.* 67. *t.* 24.
Arctic America, in deep sand, *Richardson.*—Caudex divided under the sand into many branches, each of which bears a dense tuft of leaves at the crown. Leaves on long petioles. Scape 2-3 inches high, somewhat leafy. Petals white. Silicle 6–8 lines long: septum marked with an obscure longitudinal line in the middle.—*Hook.*

29. APHRAGMUS. *Andrzejowski, in DC. prodr.* 1. *p.* 209.

Oreas, *Cham & Schlecht. in Linnæa,* 1. *p.* 29. *t.* 1.

Silicle lanceolate, compressed; valves plane, marked with a median line: septum none. Style very short: stigma capitate. Seeds many, oval, suspended on elongated funiculi from the upper part of the placentæ.—A small perennial herb, with the habit of Cardamine bellidifolia.—Character from *Cham. & Schlecht.*

We have scarce a doubt that Aphragmus, *Andrz.* and Oreas, *Cham. & Schlecht.* are founded upon the same plant, and hence we venture to adopt the prior name. The following comprises all that is recorded concerning Andrzejowski's plant: "*Silicula acuta, valvis planis nervosis, septo nullo, semina 2-seriata pendula, cotyledones incumbentes crassæ.—In insulis Aleutianis.*" Andrz. in litt. (*DC. l. c.*) De Candolle places it in Isatideæ, but asks (very properly) if it does not rather belong to Camelineæ.

A. Eschscholtzianus (Andrz. l. c.)—Oreas involucrata, *Cham. & Schlecht. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 67.
Among loose stones on the Alpine mountains of the Island of Unalaschka. Root [rhizoma?] filiform, branching, concealed among stones; the branches bearing tufts of leaves at the extremity. Scapes ½ an inch to 2 inches high. Radical leaves on long petioles, spatulate, entire. Flowers (and fruit) corymbose, white, with large lanceolate or spatulate bracts at the base of the pedicels. Silicle 4–6 lines long, 1½ line broad, 4–10-seeded. Funiculi and seeds persistent long after the falling of the valves. Cotyledons [ex icon.] very thick. *Cham. & Schlecht.*

30. PLATYSPERMUM. *Hook. fl. Bor.-Am.* 1. *p.* 68. *t.* 18. *f. B.*

Silicle oval, compressed; valves plane. Stigma sessile. Seeds few, with a broad margin.—A small annual herb. Leaves radical. Scapes 1-flowered.

P. scapigerum (Hook. l. c.)

On rocks at the Great Falls of the Oregon, *Douglas.* March–April.—Leaves runcinate-pinnatifid, attenuate at the base, glabrous. Scapes numerous, 3 inches high. Petals white. Seeds about 4 in each cell, roundish. Funiculi rather long and slender. *Hook.*

31. SUBULARIA. *Linn.; DC.; Hook. fl. Lond. (n. ser.) t.* 135.

Silicle oval; valves turgid: cells many-seeded. Stigma sessile. "Cotyledons linear, curved." *Hook.*—A small stemless aquatic plant. Leaves linear-subulate. Scapes few-flowered: flowers white.

S. aquatica (Linn.)—*DC. prodr.* 1. *p.* 235; *Hook. l. c. & Brit. fl. p.* 299.

Borders of ponds, Maine, *Nuttall!*—♃ Scape 1–2 inches high. Flowers minute: pedicels slender. Silicle a line and a half long.—According to Hooker, the cotyledons are not biplicate as they are described by De Candolle, but are curved or folded in such a manner that their base occupies a portion of the radicular side of the curvature.

TRIBE VII. THLASPIDEÆ. *DC.*

Silicle dehiscent, compressed contrary to the very narrow septum; valves boat-shaped. Cotyledons plane, accumbent, contrary to the septum.

32. THLASPI. *Dill.; DC. syst.* 2. *p.* 373.

Silicle emarginate at the apex; valves winged on the back; cells 2- or many-seeded. Petals equal. Calyx equal at the base.—Flowers white.

? 1. *T. arvense* (Linn.): leaves oblong, toothed; silicles orbicular-obovate, shorter than the pedicels; style scarcely any.—*Pursh, fl.* 2. *p.* 435; *DC. prodr.* 1. *p.* 175; *Hook. fl. Bor.-Am.* 1. *p.* 58.

Canada; New-York to Pennsylvania, *Pursh;* Michigan, *Nuttall.* Introduced. June–July.—Cauline leaves somewhat sagittate; auricles minute. Valves of the silicle much compressed, furnished with a conspicuous wing.

2. *T. alliaceum* (Linn.): leaves oblong, obtuse, somewhat toothed; the upper ones sagittate-clasping, with acute auricles; silicles ovate-ventricose; stigma nearly sessile.—*DC. prodr.* 1. *p.* 176; *Nutt. gen.* 2. *p.* 65.

Cultivated fields, scarcely naturalized.—Flowers smaller than in T. arvense.

3. *T. montanum* (Linn.): leaves rather fleshy, entire; radical ones obovate, petioled; cauline ones oblong, sagittate-clasping; petals longer than the calyx; silicles obcordate, 4-seeded; style filiform. *DC. prodr.* 1. *p.* 176; *Hook. fl. Bor.-Am.* 1. *p.* 58.

Arctic America and Canada, ex *Hook.* May–July.—♃.

4. *T. cochleariforme* (DC.): leaves rather fleshy; radical ones petioled, ovate or obovate, somewhat toothed or entire; cauline ones oblong, cordate-clasping; petals longer than the calyx; silicles obovate, emarginate, 8-seeded.

—*DC. syst.* 2. *p.* 381; *Deless. ic.* 2. *t.* 52; *Hook. fl. Bor.-Am.* 1. *p.* 58; *Nutt.! in jour. acad. Philad.* 7. *p.* 13.
Head waters of the Oregon! April–May.—♃ Somewhat glaucous, about a span high. Stem simple, or a little branching at the base. Radical leaves abruptly narrowed into a petiole, mostly entire, or with one or two minute teeth; the limb half an inch long. Petals obovate-oblong. Pedicels 3 times as long as the silicles, diverging horizontally.—Scarcely to be distinguished from T. montanum.

5. *T. alpestre* (Linn.): leaves entire or obscurely toothed; radical ones ovate, petioled; cauline ones oblong, clasping; petals about as long as the calyx; silicles obcordate, 8–12-seeded; style filiform. *DC. prodr.* 1. *p.* 176; *Hook. fl. Bor.-Am.* 1. *p.* 58.
Canada. Introduced?

6. *T. tuberosum* (Nutt.): leaves rhomboidal-ovate, obscurely toothed, sessile; radical ones in long petioles; stem simple, pubescent; root tuberiferous and fibrillose. *Nutt. gen.* 2. *p.* 65; *DC. prodr.* 1. *p.* 177.
Western Pennsylvania, *Nuttall.* April–May.—♃ Plant 4–5 inches high. Flowers rather large, rose-color. Silicle somewhat orbicular. *Nutt.*

34. HUTCHINSIA. *R. Br. in hort. Kew.* 4. *p.* 82; *DC. syst.* 2. *p.* 385.

Silicle elliptical; valves wingless; cells 2- (rarely many-) seeded. Calyx equal. Petals equal.

1. *H. calycina* (Desv.): canescently tomentose; leaves mostly radical, on long petioles, deeply pinnatifid; calyx persistent; silicles oblong, attenuate at each end, pointed with the style. *Hook.—Desv. jour. bot.* 3. *p.* 168; *DC. prodr.* 1. *p.* 178; *Hook. fl. Bor.-Am.* 1. *p.* 58. *t.* 17. *f. B.*
β. lower leaves all entire. *Hook. l. c.*
Rocky Mountains, lat. 52°–57°. *β.* Kotzebue's Sound.—Root ligneous. Stem 3–4 inches high. Flowers white, in dense corymbs: limb of the petals roundish. Ovary oblong, somewhat hirsute.

TRIBE VIII. LEPIDINEÆ. *DC.*

Silicle usually dehiscent, compressed contrary to the narrow septum (sometimes 1-celled); valves boat-shaped (or rarely ventricose). Cotyledons plane, incumbent, parallel to the septum.

35. SENEBIERA. *Poir. dict.* 7. *p.* 75; *DC. syst.* 2. *p.* 521.

Silicle didymous; valves ventricose or somewhat carinate, partly indehiscent; cells 1-seeded. Seeds globose-triquetrous. Cotyledons linear.—Racemes opposite the leaves. Flowers white.

1. *S. pinnatifida* (DC.): leaves pinnately divided; lobes oblong, toothed or somewhat incised; silicles compressed, emarginate at the apex, reticulate-rugose. *DC. prodr.* 1. *p.* 203.
β. incisa (DC.): lobes of the leaves 3–4-parted. *DC. l. c.*—S. incisa, *Willd. enum.* 2. *p.* 268. Biscutella apetala, *Walt. Car. p.* 174. Cochlearia humifusa, *Michx.! fl.* 2. *p.* 27. Coronopus didyma, *Pursh, fl.* 2. *p.* 434; *Nutt.! gen.* 2. *p.* 65; *Ell. sk.* 2. *p.* 139.
Fields and along rivers, North Carolina! to Louisiana! west to Arkansas! Feb.–July.—① or ② Stems prostrate. Petals minute or none.

2. *S. Coronopus* (Poir.): leaves pinnately divided; segments entire, toothed or pinnatifid; silicles not emarginate at the apex, compressed; valves rugosely crested.—*Poir. dict.* 7. *p.* 76; *DC. prodr.* 1. *p.* 203. Cochlearia Coronopus, *Linn.* Coronopus Ruellii, *Allioni; Pursh, fl.* 2. *p.* 435; *Nutt. gen.* 2. *p.* 64.
Road sides, Virginia to Carolina. June–Aug. Introduced.—① and ②.

36. LEPIDIUM. *R. Br. in hort. Kew.* 4. *p.* 85; *DC. syst.* 2. *p.* 527.

Silicle ovate or subcordate; valves carinate or rarely ventricose, dehiscent; cells 1-seeded. Seeds compressed, or somewhat 3-sided.—Racemes terminal. Flowers white. (Cotyledons accumbent in several species.)

1. *L. campestre* (R. Brown): silicles ovate, winged, emarginate, scaly-punctate; cauline leaves sagittate, denticulate. *DC. syst.* 2. *p.* 535. Thlaspi campestre, *Linn.; Eng. bot. t.* 1385.
Waste places, New-York! Delaware! Introduced. June–July.—① or ② Stem and leaves minutely velvety.

2. *L. Virginicum* (Linn.): silicles nearly orbicular, wingless, emarginate; flowers diandrous (petals 4); cauline leaves linear-lanceolate, incised; cotyledons accumbent.—*Michx.! fl.* 2. *p.* 27; *DC. prodr.* 1. *p.* 205; *Hook. fl. Bor.-Am.* 1. *p.* 69.
Fields and road-sides, throughout the United States. June–August.—① About a foot high, paniculately branched above. Flowers minute, rarely triandrous.

3. *L. ruderale* (Linn.): silicles broadly oval or nearly orbicular, wingless, emarginate; flowers diandrous, apetalous; leaves (radical ones scarcely) incised; those of the branches linear, entire; cotyledons incumbent.—*Eng. bot. t.* 1595; *DC. prodr.* 1. *p.* 205; *Hook.! fl. Bor.-Am.* 1. *p.* 68, *& in jour. bot. p.* 192.
British America! to the Pacific! Michigan, *Dr. Pitcher!* St. Louis, Missouri. (*Hook.*)—① Leaves less deeply divided than in the European plant. Very near L. Virginicum; but easily distinguished by the apetalous flowers and incumbent cotyledons.

4. *L. Menziesii* (DC.): silicles orbicular, wingless, emarginate; flowers diandrous, apetalous (petals 4, *Nutt.*); radical leaves bipinnatifid; cauline and branch leaves mostly pinnatifid; the uppermost linear, entire. *Hook.*—*DC. syst.* 2. *p.* 539; *Hook. fl. Bor.-Am.* 1. *p.* 68.
California, *Menzies, Nuttall;* N. W. Coast? Rocky Mountains, *Drummond, Nuttall.*—① (♃ DC.) Radical leaves hispid or pubescent. *Hook.*

5. *L. Californicum* (Nutt.! mss.): "stem somewhat hirsutely pubescent, much branched; silicles nearly orbicular, emarginate, wingless; flowers diandrous (petals 4); leaves nearly glabrous, laciniately pinnatifid."
Near Monterey, Upper California, *Nuttall!*—① Segments of the leaves linear. Silicles very small, slightly emarginate: style almost wanting. Pedicels twice the length of the silicles. Cotyledons incumbent.

6. *L. lasiocarpum* (Nutt.! mss.): "hispidly pubescent; silicles elliptical-oval, conspicuously emarginate, wingless, somewhat pubescent, reticulated, rather longer than the pedicels; leaves undivided, linear-lanceolate, incisely toothed; flowers diandrous, apetalous."
Near St. Barbara, Upper California, *Nuttall!*—① Silicles one-third larger than in L. Virginicum; the pedicels somewhat reflexed. Cotyledons incumbent.

7. *L. nitidum* (Nutt.! mss.): "glabrous; silicles elliptical-obovate, emarginate, slightly winged, shining; pedicels flattened, about the length of the silicles; leaves laciniate, the segments linear and very narrow; flowers apetalous or dipetalous, diandrous."

With the preceding, *Nuttall!*—Silicle about one-third larger than in L. Virginicum: peduncles and pedicels a little pubescent. Cotyledons incumbent.

8. *L. oxycarpum:* silicles broadly ovate, deeply emarginate, wingless, the valves pungently acuminate and reticulated; stems branched, diffuse; leaves linear-filiform, sparingly pinnatifid, toothed; flowers apetalous, diandrous.

California, Douglas!—① Stem 3–6 inches long, branching from the base, minutely hairy. Leaves mostly radical, pectinately 3–5-toothed. Sepals alternately subulate and broadly ovate. Ovary with the points uncinate-inflexed. Silicle about 1½ line long, as long as the compressed pedicels: valves carinate, glabrous, acutely and somewhat divaricately produced beyond the septum. Style none. Cotyledons incumbent.

9. *L. latipes* (Hook.): cæspitose, strigosely pubescent; flowers in dense spiked racemes; silicles elliptical-ovate, 2-winged at the summit, reticulated; pedicels very broad, flat; leaves pinnatifid, with filiformly linear segments.—*Hook. ic.* 1. *t.* 41.

Monterey, California, *Douglas!*—① Stems numerous, densely cæspitose, 2–3 inches long, spreading. Racemes ovate or oblong, thick; the flowers much crowded. Leaves extending beyond the racemes; segments 2–3-parted or entire. Petals more than twice as long as the sepals, oblong, ciliate. Silicles muricately hirsute, deeply bifid; the lobes wing-like, straight and erect. Stigma sessile. Cotyledons incumbent.

10. *L. integrifolium* (Nutt.! mss.): "glabrous and decumbent; silicles elliptical-ovate, wingless, scarcely emarginate; septum prominent; style short but distinct; leaves lanceolate-oblong, acute, narrowed below; petals about twice the length of the broad membranaceous sepals.

"Prairies near the central chain of the Rocky Mountains, Lewis's River, &c. June–July.—♃ Root rather large and deep. Stems several, decumbent, leafy, about a foot long, paniculately branched above. Flowers rather conspicuous." *Nuttall.*—Silicles about 2 lines long, somewhat acute: pedicels 4–5 lines long, angular. Cotyledons incumbent.

11. *L. montanum* (Nutt.! mss.): "nearly glabrous, decumbent; silicles elliptical, slightly emarginate, wingless; style conspicuous; leaves pinnatifid and bipinnatifid; segments oblong; uppermost leaves trifid or entire.

"Plains of the Rocky Mountains, on the western side, to the borders of the Oregon. August.—♃ Root long, somewhat ligneous. Branches many from one root, 8–12 inches long, spreading in a circular manner. Radical leaves usually more or less bipinnatifid; segments short, acute. Flowers rather conspicuous. Sepals oval-oblong. Petals nearly twice as long as the sepals." *Nuttall.*—Silicles 2 lines long, indistinctly reticulated. Pedicels 3–4 lines in length. Cotyledons incumbent.

L. tuberosum, *L. præcox* and *L. diffusum*, *DC. syst.* being founded on species described by Rafinesque in the Forula Ludoviciana, are excluded: see p. 86.

37. CAPSELLA. *Vent.; Lam. ill. t.* 557; *DC. syst.* 2. *p.* 383.

Silicle triangular-cuneiform; valves boat-shaped, wingless, coriaceous; cells small, many-seeded.—Herbaceous, annual. Radical leaves rosulate. Flowers small, white, in long racemes.

Removed from Thlaspideæ on account of its incumbent cotyledons, which were first detected by Schkuhr. (*handb.* 2. *t.* 180.)

C. Bursa-pastoris (Mœnch.)—*DC. syst.* 2. *p.* 383; *Darlingt. fl. Cest. p.* 380. Thlaspi Bursa-pastoris, *Linn.; Eng. bot. t.* 1485.
Fields and waste places. Introduced. May–Sept.—Radical leaves variable, sometimes entire, but usually toothed, incised or pinnatifid, narrowed into a petiole at the base. Pedicels filiform, much longer than the silicles.

38. HYMENOLOBUS. *Nutt. mss.*

"Silicle ovate or elliptical, membranaceous; valves somewhat tumid, slightly carinate, wingless; cells many-seeded. Stigma sessile.—Small slender glabrous annuals, with divaricate stems, and more or less pinnatifidly cleft or laciniated leaves. Flowers minute, white."

Scarcely distinct from Capsella; with which it is apparently connected through C. elliptica, *C. A. Meyer.* (*pl. Cauc. p.* 194. Hutchinsia procumbens, *Desv.* Hymenolobus procumbens, *Nutt. mss.*)

1. *H. divaricatus* (Nutt.! mss.): "procumbent, much branched; leaves short and pinnatifid, with several oblong lobes; upper ones linear and often entire; silicle elliptical-oblong, obtuse.
"Shady grassy plains of the Oregon, near the junction of the Wahlamet. —Stems 3–4 inches long, diffusely branched. Lower leaves with about five segments. Flowers very minute."—*Nuttall.*

2. *H. erectus* (Nutt. mss.): "stem erect, much branched; leaves oblong, somewhat pinnatifid or entire; silicle linear-oblong.
"With the preceding, to which it is very closely allied." *Nuttall.*

3. *Nucamentaceæ.*

TRIBE IX. ISATIDEÆ. *DC.*

Silicle nucamentaceous, indehiscent, (mostly) 1-celled, 1-seeded. Cotyledons incumbent, the direction various.

39. THYSANOCARPUS. *Hook. fl. Bor.-Am.* 1. *p.* 69. *t.* 18.

Silicle obovate, or nearly orbicular, much compressed, usually surrounded with a broad winged margin, 1-celled. Seed broadly obovate, pendulous from a lateral funiculus. Cotyledons roundish, compressed, parallel with the valves, obliquely incumbent; the radicle approaching near the edge.—Annuals. Flowers small, white or pale violet, racemose. Silicles pendulous, on filiform pedicels.

Allied to Tauscheria; but that genus has cymbiform silicles, with a narrow margin, and the apex elongated into a beak.

* *Silicles winged, plano-convex.*

1. *T. curvipes* (Hook.): radical leaves pinnatifid or toothed; cauline ones lanceolate or linear; silicles roundish-obovate, obscurely crenate, nearly glabrous; margin broadly winged, entire or perforated with small holes; petals shorter than the calyx.—*Hook. l. c. t.* 18. *f. A; Fisch. & Meyer, ind. sem. St. Petersb. Dec.* 1835. *p.* 50.

Great Falls of the Oregon, *Douglas.* April–May.—Stems solitary, mostly branched, erect, 6–8 inches to a foot high, somewhat leafy. Leaves mostly radical, spreading. Petals linear-oblong. Silicle about 2½ lines long. *Hook.*

2. *T. elegans* (Fisch. & Meyer): petals nearly twice as long as the calyx; silicles orbicular-obovate, membranaceously winged; the wing (often) perforated with holes, emarginate at the apex.

α. silicles glabrous; style conspicuously exserted.—T. elegans, *Fisch. & Meyer, l. c.*

β. silicles villous; style slightly exserted. *Hook.! ic. t.* 39. T. Deppii, *Nutt. mss.* T. n. sp. *Fisch. & Mey. l. c.* (without a name.)

γ. silicles somewhat pubescent, wing not perforated; style not exserted.

California, *Douglas! Deppe.* (ex *Fisch. & Meyer.*)—Stem 12–18 inches high, branching, nearly glabrous. Leaves in β. lanceolate, sagittate, repandly toothed; in γ. linear, the upper ones almost subulate and sagittate-clasping. Silicles 2½ lines long; the winged margin perforated with a row of 12–14 oblong holes, or marked with thin diaphanous spots, the opaque coriaceous substance of the centre extending between them, and thus giving the silicle a radiated appearance.

3. *T. pulchellus* (Fisch. & Meyer): petals longer than the calyx; silicles glabrous, the wing not perforated, truncated at the apex; style much exserted. *Fisch. & Meyer. l. c.*

California—Petals white, or somewhat violaceous. Near T. curvipes. *Fisch. & Meyer.*

4. *T. crenatus* (Nutt.! mss.): "petals about as long as the calyx; silicles orbicular-obovate, crenate, glabrous, slightly emarginate, membranaceously winged; the wing perforated; style not exserted; leaves linear-lanceolate, runcinately and remotely denticulate.

"St. Barbara, California, March–April.—Stem 12–14 inches high, branching above. Leaves an inch long; the lower ones somewhat hirsute. Silicles about half as large as in T. curvipes; the wing more or less perforated." *Nutt.*

5. *T. laciniatus* (Nutt.! mss.): "petals as long as the calyx; silicles elliptical, glabrous, winged; the wing entire or crenate, not perforated, entire at the apex, and acuminate with the conspicuous style; leaves linear, remotely and incisely toothed.

"With the preceding.—Decumbent, deep green and glabrous. Stem about a foot long. Leaves 1½ inch long, and scarcely a line wide; teeth long and subulate. Silicile about 2 lines long, acute at each end; the wing diaphanous." *Nutt.*

* * *Silicles slightly doubly convex, wingless.*

6. *T. oblongifolius* (Nutt.! mss.): "petals about twice as long as the calyx; silicles nearly orbicular, wingless, hispid with uncinate hairs; leaves oblong, toothed, and (with the lower part of the stem) densely and stellately hirsute.

"Rocky banks of the Oregon, near the junction of the Wahlamet.—About a foot high, much branched, sometimes partly decumbent. Radical leaves attenuate into a short petiole at the base; cauline sessile. Petals cuneiform, rather conspicuous. Silicles about 1½ line long, rather acute at the base, very obtuse at the summit, and without a notch: style very short, but distinct." *Nutt.*

7. *T. pusillus* (Hook.): flowers apetalous; silicles nearly orbicular, wingless, hispid with uncinate hairs; leaves oblong, toothed, and (with the lower part of the stem) stellately hirsute.—*Hook.! ic. t.* 43.

Monterey, California, *Douglas!* Banks of the Oregon, with the preceding, *Nuttall.* April.—Stems filiform, branching from the base, 3–5 inches long. Leaves about half an inch long, ovate and oblong, sparingly toothed. Flowers very minute. Silicles scarcely a line in length, rather acute at the base: style very short.—Nearly related to the preceding; but much smaller and more slender, the silicles about half the size, and the flowers apetalous.

4. *Lomentaceæ.*

TRIBE X. CAKILINEÆ. *DC.**

Silique or silicle separating transversely into several 1-celled 1-seeded joints. Seeds usually compressed, not margined. Cotyledons plane, accumbent.

40. CAKILE. *Tourn.; DC. syst.* 2. *p.* 427.

Silicle 2-jointed; the superior portion ovate or ensiform. Seed in the upper cell erect; in the lower pendulous.—Annual glabrous and fleshy (maritime) herbs, with pinnatifid or lobed leaves. The lower joint of the silicle often abortive.

1. *C. maritima* (Scop.): superior joint of the silicle ensiform. *DC. prodr.* 1. *p.* 185; *Lam. ill. t.* 554. Bunias Cakile, *Linn.*

β. superior joint of the silicle ovate-ensiform.—C. Americana, *Nutt. gen.* 2. *p.* 62; *DC. prodr. l. c.* C. edentula, *Hook. fl. Bor.-Am.* 1. *p.* 59. C. maritima, *Pursh, fl.* 1. *p.* 434; *Ell. sk.* 2. *p.* 137. Bunias edentula, *Bigel. fl. Bost. p.* 251.

Sea shore, Canada and shores of the great Lakes! & Massachusetts! to Georgia. July–Aug.—Much branched, procumbent. Leaves oblong-cuneiform, sinuately toothed. Flowers corymbed, pale purple. Lower joint of the silicle short, clavate-obovate; the upper one with a prominent line on each side, minutely 2–3-toothed at the base. Seeds almost always accumbent.

TRIBE XI. RAPHANEÆ. *DC.*

Silique or silicle indehiscent, transversely separating into 1-(or few-) seeded joints. Seeds globose. Cotyledons conduplicate, as in Brassiceæ.

41. RAPHANUS. *Linn.; DC. syst.* 2. *p.* 662.

Silique transversely many-celled. Seeds in a single series.—Leaves lyrate. Flowers yellow, white, or purple.—*Radish.*

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* C. A. Meyer (*pl. Cauc. p.* 185.) changes the name of this tribe to Chorisporeæ, excluding Cakile, which he incorrectly says has the cotyledons (at least in the upper cell) always incumbent. See *Torr. in ann. lyc. New-York,* 4. *p.* 91.

1. *R. Raphanistrum* (Linn.): silique terete (joints 1-seeded), moniliform and 1-celled when mature, longer than the style; leaves simply lyrate.—*DC. prodr.* 1. *p.* 229; *Bigel. fl. Bost. p.* 252.

Road-sides and in fields, New-England. June–July. Introduced, but hardly naturalized.—① Corolla veiny, yellow, white in decaying. Silique 3–8-seeded.—*Wild Radish.*

Discovium Ohioense, *Raf. in jour. phys.* 89, (1819) *p.* 96, and *DC. prodr.* 1. *p.* 236, is so imperfectly described that it cannot be identified. It is probably a Thlaspi or a Lepidium.

ORDER XV. CAPPARIDACEÆ. *Juss.*

Sepals 4, deciduous or marcescent, distinct or somewhat united and imbricated in æstivation, or cohering in a tube with a valvate æstivation. Petals 4, hypogynous, cruciate or irregular, usually unguiculate and more or less unequal, sometimes wanting. Stamens 6–12 (rarely 4), or numerous, but usually some multiple of 4, inserted on the short or sometimes elongated torus: filaments equal or unequal: anthers innate or introrse, mostly revolute when dry. Ovary often stipitate, composed of 2 (very rarely of several) united carpels, with 2 parietal placentæ: styles united into one, often filiform, sometimes short or almost none: stigma often discoid or subcapitate. Fruit 1-celled, either a pod-shaped (siliqueform) 2-valved capsule, with the valves often separating from the persistent filiform placentæ (rarely coriaceous and nearly or quite indehiscent), or baccate, very rarely 1–2-, usually many-seeded. Seeds campulitropous, reniform, with no albumen, but the lining of the testa often thickened. Embryo curved: cotyledons foliaceous, somewhat incumbent.—Herbs, shrubs, or rarely small trees, with a watery acrid juice which sometimes has the pungent taste of the Cruciferæ. Leaves alternate, petioled, simple or palmately compound: leaflets mostly entire. Stipules none, or with spines in their place.

TRIBE I. CLEOMEÆ. *DC.*

Capsule membranaceous, dehiscent, (rarely subcoriaceous and indehiscent).—Leaves mostly compound.

1. CLEOMELLA. *DC. prodr.* 1. *p.* 237.

Sepals very small, distinct, spreading. Petals 4, subspatulate, subsessile. Torus short, oblong. Stamens 6: filaments incurved in æstivation. Pod obovate-rhomboidal, 4–6-seeded, raised on a filiform stipe. Embryo conduplicate.—A slender annual. Leaves 3-foliolate: leaflets linear. Raceme terminal, leafy. Flowers yellow.

C. *Mexicana* (DC.)—"*Ic. fl. Mex. ined.*" fide *DC. l. c.; Torr.! in ann. lyc. New-York*, 2. *p.* 157; *Don, in Edinb. new phil. jour.* (*Jan.* 1831); *Hook.! ic.* 1. *t.* 28.
Mexico, *DeCandolle;* Texas, *Drummond!* Arkansas, *Dr. James!*—Glabrous, a foot or more high, branching above. Leaflets narrowly linear-lanceolate, flat, longer than the petiole. Pod somewhat compressed, silicle-shaped. Stipe longer than the pod. Style very short. Placentæ filiform, persistent after the valves fall off, each about 3-seeded.

2. GYNANDROPSIS. *DC. prodr.* 1. *p.* 237.

Sepals distinct, spreading. Petals 4. Torus linear, elongated. Stamens 6: the lower part of the filaments adnate to the torus its whole length. Pod linear-oblong, raised on a long stipe which rises from the top of the torus.—Annuals. Leaves digitately 3–7-foliolate. Flowers in a terminal raceme.

§ *Æstivation open.*—GYMNOGONIA, R. Br.

1. *G. pentaphylla* (DC.): minutely glandular-pubescent; middle leaves 5-foliolate; lower and floral leaves 3-foliolate; leaflets obovate, entire or obscurely serrulate.—*DC. l. c.*; *W. & Arn. prodr. Ind.* 1. *p.* 21. Cleome pentaphylla, *Linn.; Pursh, fl.* 2. *p.* 441; *Nutt.! gen.* 2. *p.* 73; *Bot. mag. t.* 1681. Cleome (Gymnogonia) pentaphylla, *R. Br. app. Denh. & Clapp. voy. p.* 17.
In cultivated grounds, Pennsylvania (*Pursh*) to Florida. Introduced. May–July.—Stem 2–3-feet high. Penducles slender. Calyx deciduous. Petals white: claws long and slender. Pod 2–3 inches long.—A native of Africa and India.

3. CLEOME. *Linn.* (in part); *Gærtn. fr. t.* 76.

Cleome & Peritoma, *DC.*

Sepals distinct, or sometimes more or less united below. Petals 4. Torus minute or nearly hemispherical. Stamens 6, or rarely only 4, often unequal. Pod linear or oblong, subsessile or raised on a stipe.—Annual (rarely perennial) herbs, or shrubs. Leaves digitately 3–9-foliolate or simple. Flowers solitary, or in a terminal raceme.

§ 1. *Sepals more or less united below: calyx marcescent, at length sometimes separating at the base: torus minute: pod stipitate.*—PERITOMA, DC. (Atalanta, *Nutt.*)

The discovery of 3 additional species allied to Cleome serrulata, *Pursh*, renders it obvious that this plant cannot be separated from Cleome. They might perhaps all be referred to the section *Pedicellaria* of De Candolle.

1. *C. serrulata* (Pursh): leaves 3-foliolate; leaflets lanceolate or spatulate, minutely serrulate; sepals united more than half their length; petals (violet-

purple) distinctly unguiculate; pods lanceolate, longer than the stipe.—*Pursh, fl.* 2. *p.* 441. Atalanta serrulata, *Nutt.! gen.* 2. *p.* 73. Peritoma serrulata, *DC. prodr.* 1. *p.* 237.

Banks of the Missouri and Arkansas, *Nuttall! Dr. James!* Aug.—① Nearly glabrous. Leaves glaucous above. Flowers in a terminal raceme. Calyx at length separating from the base: segments short, subulate. Stamens equal.

2. *C. integrifolia:* somewhat glaucous; leaves 3-foliolate; leaflets (and bracts) lanceolate (the lowermost oblong), entire, submucronate; sepals united to the middle; petals (reddish-purple) with very short claws; pods oblong-linear, compressed, much longer than the stipe.—Peritoma? integrifolia, *Nutt. in jour. acad. Philad.* 7. *p.* 14.

Plains of the Platte to Oregon, *Nuttall!* June–Aug.—① Stem 2–3 feet high. Racemes sometimes nearly a foot long. Flowers large, showy. Calyx persistent; segments triangular-acuminate. Stamens equal.—This species was originally described from specimens collected by Capt. Wyeth exhibiting the floral leaves only, which are narrowly lanceolate and very acute at each end. Mr. Nuttall obtained complete specimens in his recent journey.

3. *C. aurea:* "glabrous; leaves 3–5-foliolate; leaflets oblong-lanceolate, acute at each end, entire [sepals united at the base only]; petals oblong-elliptical, nearly sessile (golden-yellow); stamens equal; pods linear, [short] longer than the stipe." *Nutt.! mss.*—Peritoma aurea, *Nutt. in jour. acad. Philad.* 7. *p.* 15.

"Plains of the Platte to Lewis's River, in irrigated places. June–Aug.—① Branching, 1–3 feet high. Much larger in all its parts than C. lutea." *Nutt.*

4. *C. lutea* (Hook.): nearly glabrous; leaves 5-foliolate; leaflets narrowly lanceolate, entire; sepals nearly distinct; petals (yellow) oblong-obovate, nearly sessile; stamens unequal; pods oblong-lanceolate, about the length of the stipe.—*Hook. fl. Bor.-Am.* 1. *p.* 70. *t.* 25.

Rocky Mountains and Oregon, *Douglas, Nuttall!*—① Stem 6–12 inches high. Sepals lanceolate, persistent. "Stamens 6 of which 2 are longest, with small oblong curved anthers, and 4 shorter with linear mucronate anthers." *Hook. l. c.* But the figure represents a flower with 4 long stamens and 2 short ones.

4. POLANISIA. *Raf. in jour. phys.* (1819) *p.* 98.

Sepals distinct, spreading. Petals 4. Stamens 8–32: filaments filiform or dilated at the summit. Torus minute (often nectariferous). Pod linear, sessile or nearly so.—Annual herbs with the habit of Cleome, mostly glandular, with a heavy odor.

§ 1. *Torus bearing a short fleshy nectary or gland next the upper sepal: filaments filiform, often unequal and more or less declined,* (6–8 *of them arising from between the nectary and the ovary*)*: petals on slender claws, unequal, emarginate or entire: sepals tardily deciduous.*—POLANISIA proper.

Polanisia proper, as is indicated by R. Brown (in *app. to Denh. & Clapp. p.* 15), consists of two American species solely, viz: P. graveolens and the closely allied P. uniglandulosa of Mexico. The close resemblance between these two species was first noticed by Nuttall. (See *gen. N. Am. pl.* 2. *p.* 74.) A third species exists in the herbarium of Maj. Le Conte, which approaches in the foliage and the very unequal petals to Cristatella; a curious genus, which should perhaps be considered a section of Polanisia, if indeed all these genera ought not to be restored to Cleome, according to the opinion of Brown.

1. *P. graveolens* (Raf.): viscidly pubescent and glandular; leaves 3-foliolate; leaflets (and bracts) oblong, shorter than the petiole; sepals (purplish) somewhat unequal; petals cuneate, emarginate; stamens mostly 10 or 11; style shorter than the ovary; pods broadly lanceolate, turgid, attenuate at the base, reticulated, rough with a glandular pubescence.—*Raf. l. c.; DC. prodr.* 1. *p.* 242; *Hook. fl. Bor.-Am.* 1. *p.* 71. Cleome dodecandra, *Michx. fl.* 2. *p.* 32; *Pursh! fl.* 2. *p.* 441. C. dodecandra, var. Canadensis, *Linn.*; *Cornut. Can. t.* 131. C. viscosa, *Spreng. syst.* 2. *p.* 125, ex *Arn.*

On the gravelly banks of rivers and lakes, from L. Champlain! and Ontario! to Arkansas! June–Aug.—Branching, 6–18 inches high. Raceme many-flowered. Sepals glandular on the back. Petals yellowish-white: claws filiform. Filaments purplish. Nectary concave, truncate, very short. Style at length deciduous.—Odor of the plant strong and unpleasant.

2. *P. tenuifolia:* viscid-glandular; leaves 3-foliolate, nearly glabrous; leaflets (and bracts) filiform-linear, longer than the petiole; petals very unequal, suborbicular, entire, on short claws; stamens 9–11; style longer than the ovary; pods linear, terete, minutely reticulated, glabrous.—Cleome tenuifolia, *herb. Le Conte.*

Georgia, *Le Conte!*—Stem a foot high, branched, slender. Leaflets about an inch long. Raceme few-flowered; pedicels filiform. Sepals glabrous, nearly equal. Filaments nearly equal. Nectary minute, cuneiform, emarginate. Style persistent.

5. CRISTATELLA. *Nutt. in jour. acad. Philad.* 7. *p.* 85. *t.* 11.

Sepals somewhat united at the base, spreading. Petals 4, on filiform claws, fimbriate-toothed or laciniate; the two lower much smaller. Torus minute, bearing a conspicuous tubular and truncate petaloid nectary between the ovary and the upper sepal. Stamens 6–14: filaments nearly equal, declined. Ovary declined: style filiform. Pod linear, stipitate.—Annual minutely viscid-glandular 3-foliolate herbs, with the habit of Polanisia tenuifolia. Leaflets narrowly linear, longer than the petiole. Raceme few-flowered, leafy: pedicels filiform. Flowers small, white or pale yellow.

1. *C. erosa* (Nutt.): stamens 10–14; petals white; lamina of the lower ones laciniately parted; sepals acute.—*Nutt.! l. c. p.* 86. *t.* 11.

On sandy hills near Red River, *Nuttall!* and near Fort Towson, *Dr. Leavenworth!* June–July.—Rather slender, branching, 8–14 inches high. Sepals oblong-lanceolate, shorter than the claws of the petals. Superior petals very broadly cuneiform, sparingly lacerate-toothed: lower ones cuneiform, cleft nearly to the base of the lamina; segments linear, slightly dilated and cleft or toothed at the apex. Nectary about the length of the smaller petals, yellow, tubular, toothed at the summit (cleft on the side next the ovary, according to Nuttall; but in the specimens from Dr. Leavenworth, the tube is undivided). Pod narrowly linear, slightly torulose, many-seeded, ascending, much longer than the stipe, crowned with the slender style. Seeds circinate, minutely roughened.

2. *C. Jamesii:* stamens 6–9; petals pale yellow; lamina of the lower ones palmately fimbriate-cleft; sepals obtuse.—Cleome n. sp., *Torr.! in ann. lyc. New-York*, 2. *p*. 168.

In sand, Arkansas, *Dr. James!* Texas, *Drummond!* (3rd Tex. coll. no. 3.)—Strict, somewhat branched, a foot or more high. Leaflets rather shorter, and flowers considerably smaller than in C. erosa. Sepals slightly unequal, oblong, obtuse, as long as the claws of the petals. Petals obovate-orbicular, somewhat cuneiform at the base; lamina of the lower ones laciniately cleft, but not parted to the base. Nectary at first undivided, at length cleft on the inside (?). Stipe and style shorter than in the preceding species. Mature fruit not seen.

6. ISOMERIS. *Nutt. mss.*

"Sepals united below, somewhat spreading, marcescent. Petals 4, oblong, sessile, regular. Torus fleshy, subhemispherical, produced into a small dilated appendage on the upper side. Stamens 6: filaments equal, [inflexed in æstivation] much exserted. Capsule large, obovate-elliptical, inflated, coriaceous, indehiscent, stipitate, crowned with the very short subulate style. Seeds several, very large, smooth.—A low tree, with a long tap-root, and a very spreading top. Leaves crowded, 3-foliolate. Flowers large, yellow, in terminal racemes. Whole plant with the unpleasant odor of Polanisia."

I. arborea (Nutt.! mss.)

"St. Diego, California.—Stem about the thickness of a man's arm, very knotty: the wood hard and yellow. Young branches, petioles, &c. minutely pubescent. Leaflets lanceolate, mucronulate, glabrous. Calyx campanulate: segments triangular-ovate, acuminate. Petals slightly spreading. Capsule slightly compressed, an inch or more long, and ¾ of an inch broad, longer than the stipe, crowned with the very short style: stigma minute. Seeds several upon each parietal placenta, as large as a small pea: cotyledons incumbently incurved." *Nutt.*

This genus, with the character somewhat modified, may possibly be found to include several tree-like S. American species of Cleome, (of the section *Pedicellaria*), and should perhaps be viewed as a section of Cleome.

ORDER XVI. RESEDACEÆ. *DC.*

Sepals 4–6, somewhat united at the base, unequal, herbaceous, persistent: æstivation open. Torus short, bearing a flat and rounded glandular hypogynous disk, which is produced posteriorly (i. e. next the axis) between the petals and the stamens. Petals 4–6 (or by abortion fewer), open in æstivation, deciduous, unequal, the posterior ones larger, the anterior ones often abortive or sometimes wanting; claws usually broad and thickened, nectariferous within; the lamina often lacerate or palmately parted. Stamens 8–20, rarely 3, inserted on the disk: filaments erect: anthers oval, fixed by the middle, introrse.

Ovary 1-celled, 3–4 lobed, composed of 3–4 united carpels, which are distinct and diverging at the apex: stigma sessile, minute, glandular, alternate with the parietal placentæ. Fruit a membranous 1-celled many-seeded capsule, rarely succulent, opening between the stigmas long before maturity. Seeds campulitropous, reniform, smooth or pitted: albumen none or scarcely any. Embryo arcuate: radicle taper.—Herbaceous or rarely suffrutescent plants, with a watery juice. Leaves alternate or sparse, undivided or pinnatifid, without stipules, but often biglandular at the base. Flowers in terminal racemes or spikes, small, often very fragrant.

With the exception of the plant brought from California by Mr. Nuttall, Resedaceæ are exclusively natives of the region surrounding the Mediterranean.—Reseda luteola (the *Dyer's Rocket*, or *Yellow-weed*, used in dying woollen stuffs yellow) is found along road-sides in portions of the western part of the State of New-York, but is hardly naturalized.

1. ELLIMIA. *Nutt. mss.*[*]

"Sepals 4. Petals 2, small, membranaceous, linear-oblong, entire or emarginate, posterior or next the axis. [Disk scarcely any.] Stamens 3, alternate with the petals. Capsule depressed-globose, somewhat 8-lobed below, opening by a quadrangular cleft at the summit: stigmas 4. Seeds 20 or more, very smooth and shining.—A small glabrous annual, with crowded slightly succulent and narrowly linear leaves. Flowers in short and slender spikes."

E. ruderalis (Nutt.! mss.)
"St. Barbara, California.—Root slender, simple. Stem branched from the base, 5–6 inches high. Leaves resembling those of Linaria vulgaris, but smaller. Flowers subtended by a bract similar to the sepals, very small. Sepals all inclined anteriorly. Petals white, one of them usually emarginate. Ovary rather deeply 4-lobed below; each lobe (or carpel) more or less 2-lobed. Seeds at first bright green, at length black, narrowly reniform." *Nutt.*

Nutt's label says St. Diego

ORDER XVII. POLYGALACEÆ. *Juss.*

Sepals 5, distinct, usually persistent, very irregular; three of them exterior and smaller, of which one is superior (next the axis of inflorescence) and two inferior; the two lateral or inner ones (*wings*) larger and usually petaloid: æstivation imbricated. Petals hypogynous, irregular; deciduous, usually 3; of which one (*the keel*) is anterior and larger than the rest, and the two others alternate with the upper and lateral or inner sepals, often connate with the keel (rarely 5, and then the 2 minute additional ones are situated between the wings and the lower sepals): the keel usually crested or 3-lobed. Stamens 6–8, hypogynous: filaments combined into a tube which is split on the upper side and more or less connate with the claws of the petals, free at the summit: anthers innate, usually 1-celled,* opening by a terminal pore. Ovary compressed, formed of 2 (anterior and posterior) united carpels, 2-celled with the placentæ in the axis, sometimes 1-celled by the suppression of the upper cell, very rarely 1-celled with 2 parietal placentæ: ovules solitary (or very rarely 2–6) in each carpel, pendulous: style curved and often cucullate. Fruit loculicidal or indehiscent. Seeds anatropous, with a crustaceous testa: albumen copious and fleshy, rarely almost none. Embryo as long as the albumen, straight or very slightly curved.—Herbaceous (all the N. American species) or shrubby plants; the roots very bitter and often milky. Leaves exstipulate, entire, generally alternate or sparse, the lower ones not unfrequently verticillate. Flowers usually racemose or spicate: pedicels 1–3-bracteate.

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[*] "From ἔλλειμμα (defective); in allusion to the reduction in the parts of the flower." *Nuttall.*

1. POLYGALA. *Tourn.; Lam. ill. t.* 598; *A. St. Hil. & Moquin-Tandon, in mem. mus.* 17. *p.* 313.

Sepals persistent; the wings large and petaloid. Petals 3; their claws coherent with the stamineal tube; the lowest one keel-shaped. Ovary 2-celled: ovules solitary in each cell. Capsule 2-celled, compressed contrary to the very narrow dissepiment, elliptical, obovate or obcordate. Seeds carunculate, with copious albumen.—Racemes often spicate or capitate.

§ 1. *Spikes thick, capitate or oblong, terminating the stem and branches: keel cristate (the crest often minute): style mostly cucullate and dilated in the middle: filaments united nearly to the summit: caruncle with a 2-lobed appendage. Annual or biennial.*

1. *P. sanguinea* (Linn.): spikes globose-ovate, rather loose; wings elliptical-obovate, attenuate at the base, twice as long as the fruit, crest minute; seed globose-obovate, hairy, with a very minute caruncle; leaves linear; stem somewhat fastigiately branched.—*Nutt.! gen.* 2. *p.* 88; *DC. prodr.* 1. *p.* 328. P. viridescens, *Poir. dict.* 5. *p.* 502 (fide *DC.*); *Pursh, fl.* 2. *p.* 465.

Dry soils, New Jersey (*Nuttall*) to Georgia! Kentucky! and Louisiana! Aug.–Sept.—① About a span high. Leaves ¾ of an inch long, acute. Spike an inch long, and about half an inch in diameter, obtuse. Wings thin and membranaceous, bright rose-color. Capsules broadly obovate, scarcely covered by the narrow wings. Style much dilated and cucullate in the middle, with a filiform bearded process at the summit. Seed black.

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* That the one-celled anthers in this family do not belong to half-stamens, but result from the union of the two cells, is evident from their structure in Polygala paucifolia and others of the same section, in which the imperfect septum may be observed.

2. *P. purpurea* (Nutt.): spikes ovate or oblong, compact; wings broadly ovate or obovate; crest minute; seed obovate, hairy; caruncle nearly as long as the seed; leaves linear and oblong-linear; stem fastigiately branched.—*Nutt. gen.* 2. *p.* 88; *DC. prodr.* 1. *p.* 328; *Darlingt. fl. Cest. p.* 401. P. sanguinea, *Michx.! fl.* 2. *p.* 52; *Pursh! fl.* 2. *p.* 465; *Bigel. fl. Bost. p.* 264; *Bart. fl. Amer. Sept.* 2. *t.* 46.

Wet meadows; also in sandy fields, Massachusetts! to New Orleans! west to Arkansas! July–September.—① Stem 8–12 inches high, erect, sometimes simple, but usually more or less branched above, angular and slightly winged. Leaves an inch long and 2 lines wide. Racemes at first almost globose, at length oblong; lower flowers deciduous: bracts minute, somewhat persistent. Wings usually dilated at the base, or somewhat cordate, rose-color and green, of a firm texture, generally twice as long as the mature fruit. Style as in the preceding species. Seeds grayish-black.—Much more common than the preceding species, from which it is easily distinguished by its broader and thicker wings, and minute caruncle, which is scarcely one-fifth the length of the seed. This is P. sanguinea of most North American botanists; but whether it is the plant of Linnaeus can only be determined by consulting his herbarium.

3. *P. cruciata* (Linn.): spikes ovate, dense, sessile or on short peduncles; wings deltoid-cordate, acute or cuspidate; crest minute; caruncle nearly as long as the seed; stem somewhat fastigiate, winged at the angles; leaves verticillate in fours, linear and linear-oblong, punctate.—*Michx.! fl.* 2. *p.* 52; *Nutt.! gen.* 2. *p.* 89; *DC. prodr.* 2. *p.* 328; *Ell. sk.* 2. *p.* 183; *Bigel. fl. Bost. p.* 266; *Hook. fl. Bor. Am.* 1. *p.* 85. P. brevifolia, *Nutt. l. c; DC. l. c.* P. fastigiata, *Nutt.! l. c.* P. cuspidata, *Hook. & Arn. in bot. jour.* 1. *p.* 195.

Swamps, particularly where Sphagnum abounds, Massachusetts to Florida! west to Louisiana! Aug.–Sept.—① Stem (in open situations) low and with spreading branches, or (in shady places) rather tall, with erect slender branches. Leaves linear, or somewhat oblong, obtuse, marked with obscure resinous dots. Spikes at first dense, often sessile, but sometimes pedunculate. Wings much dilated at the base, greenish with a purple margin, larger than the capsule. Lateral petals oblong. Style as in P. sanguinea. Seed obovate-oblong, sparsely hirsute.—This species varies much in size, branching of the stem and form of the leaves, according to its degree of exposure to light and moisture.

4. *P. lutea* (Linn.): spikes ovate, dense; flowers distinctly pedicellate; wings ovate, abruptly acuminate; exterior sepals minute; crest minute; cauline leaves oblong-lanceolate, acute; radical ones obovate, attenuate at the base; stems mostly branched.—*Nutt.! gen.* 2. *p.* 88; *DC. prodr.* 1. *p.* 328; *Ell. sk.* 2. *p.* 185. P. lutea, var. elatior, *Michx.! fl.* 2. *p.* 54.

Sandy swamps, New Jersey! to Alabama! June–October.—② Stem 6–12 inches high, often simple, but generally throwing off a few long nearly naked and spreading branches. Radical leaves rosulate, obtuse. Flowers bright orange-yellow, and of nearly the same color when dry. Style elongated, slightly dilated in the middle, from which proceeds a pedicellate gland. Seed hairy. Lobes of the caruncle linear, collateral, nearly as long as the seed.

5. *P. nana* (DC.): spikes cylindrical-ovate, dense; flowers nearly sessile; wings ovate, cuspidately acuminate, twice the length of the nearly equal exterior sepals; crest conspicuous, segments filiform, exceding the lateral petals; leaves oblong-spatulate, somewhat petioled; stem mostly simple, often shorter than the leaves.—*DC. prodr.* 1. *p.* 328. P. viridescens, *Nutt.! gen.* 2. *p.* 88 (not of *Poir.*); *Ell. sk.* 2. *p.* 186. P. lutea, var. nana, *Michx.! fl.* 2. *p.* 54.

Damp pine barrens, Carolina! to Louisiana! west to Arkansas!—Stems 1–4 inches long. Radical leaves often ligulate, obtuse. Spikes large and very thick, conspicuously squarrose with the projecting cusps of the wings. Flowers green with a tinge of yellow. Style rather slender, somewhat dilated and furnished with a projecting gland in the middle. Seed obovate, hairy. Lobes of the caruncle diverging, nearly as long as the seed.

§ 2. *Spikes ovate, in simple terminal or compound cymes: keel cristate (the crest sometimes minute): styles slender, 2-lobed, not cucullate: filaments united nearly to the summit: appendage of the caruncle very minute or none. Biennial.*

5. *P. corymbosa* (Michx.): cymes compound; spikes ovate; wings oblong, cuspidate; radical leaves spatulate-obovate; cauline ones linear; stem simple below, angular.—*Michx.! fl.* 2. *p.* 54; *Nutt.! gen.* 2. *p.* 89; *DC. prodr.* 1. *p.* 329. P. ramosa, *Ell. sk.* 2. *p.* 186.

Swamps, Sussex county, Delaware, *Nuttall*, to New-Orleans! Texas, *Dr. Leavenworth!*—Stem 8–12 inches high, simple, (except when the plant has been injured), bearing a large terminal corymb. Radical leaves an inch long. Spikes rather compact, half an inch in diameter. Flowers citron-yellow, becoming blackish-green in drying. Wings 4 times as long as the capsule. Seed oblong, with a minute roundish caruncle.—Elliott has described the stem as branched from the base, which is never the case, except it has been broken off, when it throws up lateral branches.

6. *P. acutifolia:* cyme compound; spikes ovate, rather loose; wings oblong, rather obtuse, mucronate; exterior sepals ovate-triangular, acute; crest conspicuous; seed subglobose, glabrous, without a caruncle; stem simple, attenuated upward; radical leaves lanceolate-linear, very acute; cauline ones linear-subulate.

Borders of pine-barren ponds, Middle Florida, *Dr. Chapman!* May–Oct. —Stem 2–3 feet high, simple, somewhat angled above. Radical leaves 2–3 inches long, attenuated to a sharp point; cauline leaves gradually diminishing upward to mere subulate bracts. Flowers blackish-green when dry, distinctly pedicellate. Exterior sepals unequal; the upper one more than half as large as the wings. Crest composed of 4–6 capitate or emarginate processes. Style at first straight, afterwards curved above the middle: gland (stigma?) sessile. Capsule minute, dilated; one of the cells usually abortive. Seed black, slightly dotted.—Resembles P. cymosa; but that species has the cyme simple, much smaller exterior sepals, and an inconspicuous crest.

7. *P. cymosa* (Walt.): cyme simple; spikes ovate; wings elliptical-oblong, rather obtuse, mucronulate; superior sepal half as large as the wings, rather obtuse; lateral petals distinct nearly to the base; crest minute; seed subglobose, glabrous, without a caruncle; stem simple, terete, attenuated upward; radical leaves linear-spatulate; cauline ones linear-subulate, minute. —*Walt. Car. p.* 179. P. graminifolia, *Poir. dict.* 5. *p.* 500; *DC. prodr.* 1. *p.* 329. P. attenuata, *Nutt. gen.* 2. *p.* 90. P. corymbosa, *Ell. sk.* 2. *p.* 187. (not of *Michx.*)

Ponds and swamps in pine barrens, North Carolina, *Nuttall*, to South Carolina! and Florida! June–Aug.—Stem 2–5 feet high. Radical leaves 2–5 inches long; cauline ones gradually diminishing in size; the uppermost mere scales. Cyme always simple; the peduncles short, squarrose with the persistent bracts. Flowers yellow, drying blackish-green. Wings as long as the corolla, obtuse, with a minute mucronate tip. Crest formed of 2–3 very short subulate processes. Style curved toward the summit: the gland nearly sessile.

8. *P. Baldwinii* (Nutt.): Cyme compound; spikes subglobose, compact; flowers (nearly white) on very short pedicels; sepals all cuspidate; the wing

oblong-lanceolate, much longer than the corolla; lateral petals distinct nearly to the base; crest rather conspicuous; seed ovate, very hairy; caruncle very minute, 2-lobed; stem simple, angular; radical leaves spatulate, obtuse; cauline ones lanceolate.—*Nutt.! gen.* 2. *p.* 90; *DC. prodr.* 1. *p.* 329; *Ell. sk.* 2. *p.* 187.

β. *chlorgena*: flowers green when dry.

Wet pine land, Georgia, *Dr. Baldwin! Le Conte!*—Stem 2–3 feet high, leafy to the summit. Leaves scarcely an inch long; cauline ones acute. Spikes squarrose with the cuspidate points of the wings. Bracts twice as long as the pedicels. Flowers whitish even when dry; except in β. which, in a dried state, are of a beautiful verdigris-green, very odorous (*Le Conte.*) Wings nearly twice as long as the corolla, with a long cuspidate point. Crest consisting of 4 narrow processes, the two exterior ones simple, the others bifid. Style nearly straight: gland scarcely pedicellate. Seeds clothed with spreading hairs.—The variety β. has the flowers more distinctly pedicellate, the cyme with longer branches, and the processes of the crest twice bifid. It may prove to be a distinct species.

§ 3. *Spikes oblong-cylindrical, compact, the flowers nearly sessile: keel cristate: style 2-lobed, not cucullate in the middle: filaments united nearly to the middle: caruncle cristate, spongy.*

9. *P. incarnata* (Linn.): glaucous; wings lanceolate, much shorter than the corolla; claws of the petals united into a long slender cleft tube; lamina of the lateral petals obovate; stem slender, mostly simple; leaves linear-subulate, scattered, without glandular dots.—*Michx.! fl.* 2. *p.* 52; *Pursh, fl.* 2. *p.* 464; *Ell. sk.* 2. *p.* 185; *DC. prodr.* 1. *p.* 327.

β. stem paniculately branched; leaves very minute; tube of the corolla a little longer than the wings.—P. paniculata, *herb. Le Conte.*

Dry soils, District of Columbia! to Florida! west to Arkansas! β. Georgia, *Le Conte!*— ① Plant 1–2 feet high, erect. Leaves 4–6 lines long (in β. almost wanting). Spike 1–1½ inch long. Bracts subulate. Flowers pale purple or rose-color. Exterior sepals unequal, ovate-lanceolate. Wings cuspidate, usually about half as long as the tube of the corolla. Lamina of the petals distinct; the claws united with the filaments into a slender nearly straight tube or sheath, which is cleft on the inside: crest very conspicuous. Style long and filiform the greater part of its length, curved towards the summit, bearded at the extremity: gland sessile. Seed ovate, hairy. Caruncle 2-lobed, spongy or vesicular; the lobes projecting above the seed in the form of a crest, and attached by the middle to the short neck or stipe of the seed.

10. *P. setacea* (Michx.): wings oblong, abruptly acuminate, two-thirds the length of the petals; tube of the corolla very short; stem filiform, simple or sparingly branched; leaves very minute, scale-like.—*Michx.! fl.* 2. *p.* 52; *Ell. sk.* 2. *p.* 183; *DC. prodr.* 1. *p.* 328.

North Carolina, *Michaux!* Georgia! to Florida!—♃ ? (① *DC.*) Stem about a foot high, often with one or more long, slender, erect branches. Leaves scarcely more than a line long, setaceous. Spike ¾ of an inch long. Flowers pale rose-color. Exterior sepals unequal; the posterior ones ovate. Petals united about half their length; lamina of the lateral ones ovate: crest conspicuous, composed of 6–8 filiform, sometimes emarginate, processes. Stamens 6, distinctly diadelphous. Seed as in the preceding species.

§ 4. *Spikes elongated or racemose: keel cristate: filaments united nearly to the summit: style dilated and cucullate in the middle: appendage of the caruncle 2-lobed.*

11. *P. verticillata* (Linn.): spikes pedunculate, acute, dense; wings roundish-obovate; crest conspicuous; stem erect, branched; leaves verticillate, linear and lanceolate-linear, glandularly punctate.—*Michx.! fl.* 2. *p.* 54; *Nutt.! gen.* 2. *p.* 89; *Ell. sk.* 2. *p.* 182; *DC. prodr.* 1. *p.* 329; *Hook. fl. Bor.-Am.* 1. *p.* 85.

Sandy fields and dry hill-sides, Canada! to Florida! and west to Arkansas! June–Aug.— ① Stem 6–10 inches high. Leaves mostly in whorls of 4 or 5, but sometimes scattered. Spike 15–20-flowered, an inch or more in length, 2 lines in diameter at the base, and tapering to a pretty acute summit. Flowers very minute, greenish-white. Bracts very deciduous. Exterior sepals unequal; the posterior ones ovate, twice as large as the other two. Wings a little longer than the corolla. Lateral petals nearly as large as the wings, and somewhat spreading. Style dilated and saccate almost immediately above the ovary: gland inconspicuous; the terminal appendage subulate, with a hairy tuft at the extremity. Seed oblong, hairy. Caruncle with 2 distant oblong lobes nearly half the length of the seed.—In this and the following species, the exterior sepals, the ovary, and the keel of the corolla are furnished with oblong or linear vesicles, which are filled with a yellowish farinaceous matter.

12. *P. ambigua* (Nutt.): spikes pedunculate, acute, dense; rachis squarrose with the persistent bracts; wings roundish; stem erect, with virgate branches; leaves linear, not glandular, the lower ones sometimes verticillate, the others scattered.—*Nutt.! gen.* 2. *p.* 89; *DC. prodr.* 1. *p.* 329; *Darlingt. fl. Cest. p.* 402.

Woods and sandy fields, often in wet places, New Jersey! to Virginia, *Nuttall.* Aug.–Sept.—① Plant 8–12 inches high. Flowers greenish-white, more or less tinged with purple.—Nearly related to the preceding species in the structure of the flowers and seeds, as well as in general appearance.

13. *P. bicolor* (Kunth): spikes cylindrical, densely flowered; exterior sepals with 2 thick parallel nerves; leaves pellucid-punctate; the lower ones ternately or quinately verticillate; upper ones linear-lanceolate. *H. B. & K. nov. gen.* 5. *p.* 394. *t.* 509. *ex. DC. prodr.* 1. *p.* 327; *Hook. jour. bot.* 1. *p.* 194.

Near New-Orleans, *Drummond.* ♃ (① DC.) Stem 1½ foot or more in height. The verticillate leaves obovate-lanceolate; the upper and alternate ones linear. Spike very long: flowers much larger than in P. verticillata. *Hook.*—We have not seen this plant. May it not be a variety of of P. verticillata or P. ambigua? The "thick parallel nerves" of the sepals are probably the vesicles noticed in the preceding species.

14. *P. leptocaulis:* spike racemose, much elongated, very slender, loose; wings elliptical-obovate, about as long as the corolla; exterior sepals somewhat equal, acute; crest conspicuous; capsule oblong; seed oblong; lobes of the caruncle very minute; stem filiform, nearly simple, or with a few long erect branches; leaves linear, very narrow.

Texas, *Drummond!*—① Stem 1–2 feet high, glabrous. Leaves about half an inch long, almost subulate, not dotted. Spike 1–2½ inches long. The flowers about a line long, rather remote, pale purple, longer than the slender pedicels. Exterior sepals somewhat equal. Wings narrowed into a short claw at the base. Crest consisting of several filiform processes, equalling the lateral petals. Style saccate, without the terminal appendage: gland obtuse, sessile. Seed very hairy: the lobes of the caruncle collateral.

15. *P. Beyrichii:* spike dense, acute; flowers on very short pedicels; wings orbicular-obovate, concave, rather longer than the broadly obovate lateral petals; capsule oblong; seed very villous with appressed hairs; lobes of the caruncle distant, about half as long as the seed; stems numerous, somewhat branched; leaves linear or linear-spatulate, somewhat glandular.

Texas, *Drummond!* Arkansas, *Beyrich!*—♃ About a foot high, angular. Leaves an inch or more in length, and a line wide, rather thick, mucronate. Spike 1–2 inches long: flowers as large as in P. Senega, closely approximated, white. Wings concave. Processes of the crest 6, short. Keel marked with 3 yellow glands below the crest. Style short, broad and saccate; appendage short: gland prominent, but sessile. Capsule spotted with small yellow glands.

16. *P. Senega* (Linn.): spike dense, rather acute; flowers on very short pedicels; wings orbicular-obovate, concave, rather longer than the obovate petals; capsule nearly orbicular; seed somewhat hirsute with spreading hairs; lobes of the caruncle collateral, as long as the seed; stems numerous, simple; leaves lanceolate, scabrous on the margin.—*Willd. sp.* 3. *p.* 894; *Walt. Car. p.* 178; *Bigel.! med. bot.* 2. *p.* 97. *t.* 30, *& fl. Bost. p.* 265; *Bot. mag. t.* 1051; *DC. prodr.* 1. *p.* 330; *Hook.! fl. Bor.-Am.* 1. *p.* 85; *Darlingt. fl. Cest. p.* 403. P. Senega, α. albida, *Michx.! fl.* 2. *p.* 53; *Pursh, fl.* 2. *p.* 465.

β. latifolia: leaves ovate-oblong, acuminate at each end; stem branched above.

Dry rocky woods, Saskatchawan River! to North Carolina! west to Kentucky! *β.* Kentucky, *Short!* May–June.—♃ Root thick and rather ligneous. Stems about half a foot high, somewhat inclined; the base usually invested with small oval scale-like leaves. Leaves 1–2 inches long, and 3–4 lines wide (in *β.* 3–4 inches long and 1½ inches wide), serrulately ciliolate. Spike 1–2 inches long, a little inclined: flowers greenish-white. Sepals all obtuse. Crest short; the processes few and often partly confluent. Style short, galeate and somewhat rostrate; appendage wanting, but in its place a short tuft of hairs.—*Seneca Snake-root.*

17. *P. alba* (Nutt.): spike on a long peduncle; flowers nearly sessile; wings rounded, about as long as the corolla; stem simple; leaves linear, revolute on the margin. *Nutt. gen.* 2. *p.* 87; *DC. prodr.* 1. *p.* 330.

Plains of the Missouri, common, the only species of the genus in that region.—♃ About 6 inches high. Leaves glabrous. Flowers white: bracts lanceolate, deciduous.—Near P. Senega, but distinct. *Nuttall.*—We have not seen this plant, but we suspect that it is a variety of P. Senega.

18. *P. Boykinii* (Nutt.): spike dense, acute; flowers distinctly pedicellate; wings orbicular-obovate, concave, rather longer than the obovate petals; capsule broadly obovate; seed very hirsute with appressed hairs; lobes of the caruncle collateral, two-thirds the length of the seed; stems numerous, branching above; leaves verticillate in fours and fives, obovate-oblong and lanceolate.—*Nutt.! in jour. acad. Philad.* 7. *p.* 86.

Milledgeville, Georgia, *Dr. Boykin!* Near the Apalachicola River, Florida, *Croom!* June–Sept.—Root like that of P. Senega. Stems 1–2 feet high. Leaves about an inch long; the lower ones nearly obovate; upper ones gradually narrower. Spikes 2 inches long, tapering to a narrow point. Flowers resembling those of P. Senega: crest minute. Style short; appendage subulate: gland somewhat pedicellate.—This species greatly resembles P. distans, *St. Hil. fl. Bras.* 2. *p.* 24. *t.* 84.

19. *P. Chapmanii:* spike oblong, acute, loose; wings obovate, with a short claw; exterior sepals unequal; the posterior one broadly ovate, obtuse; lateral petals obovate, distinct from the keel; crest almost none; seed obovate, clothed with spreading hairs; lobes of the caruncle minute, diverging; stems filiform, somewhat branching; leaves linear-subulate, numerous.

West Florida, *Dr. Chapman!*—① Glabrous. Stems about a foot high, branching from the base or only near the summit. Leaves 6–8 lines long, scarcely half a line wide. Spike 1–1½ inch long. Bracts minute, persistent. Flowers bright rose-color, nearly as large as in P. sanguinea. Wings rather longer than the corolla. Lateral petals united with the keel only at the base:

crest consisting of several very minute processes. Style slender, a little dilated in the middle; appendage conspicuously bearded: gland sessile. Seed black; the lobes of the caruncle scarcely one-fifth the length of the seed.

20. *P. polygama* (Walt.): terminal racemes spiciform, loose, the flowers at length pendulous; wings broadly obovate, spreading, longer than the corolla; crest conspicuous; radical racemes with wingless flowers; capsule oblong, emarginate; lobes of the caruncle more than half as long as the very hairy seed; stems numerous, assurgent; leaves oblong and oblong-linear.—*Walt. Car. p.* 179; *Nutt. gen.* 2. *p.* 75; *Ell. sk.* 2. *p.* 181; *DC. prodr.* 1. *p.* 330; *Hook. fl. Bor.-Am.* 1. *p.* 86. *t.* 29. P. rubella, *Willd. sp.* 3. *p.* 875; *Bigel. fl. Bost. p.* 264, *& med. bot. t.* 54; *DC. l. c.*
Dry sandy fields and woods, Canada! to Florida! and Louisiana! June–July—② Stems 5–10 inches high. Leaves an inch long, mucronate. Terminal racemes 6–15-flowered: pedicels slender: flowers larger than in P. purpurea, deep rose-color or purplish. Wings with short claws. Processes of the crest laciniate. Style short, cucullate: gland exserted: appendage strongly bearded. Radical racemes leafless, prostrate, often subterranean.

§ 5. ***Racemes loose: keel not cristate: upper half of the filaments unconnected: style slender, without lobes: caruncle helmet-shaped, without appendages.***

21. *P. grandiflora* (Walt.): pubescent; raceme elongated, the flowers distant; pedicels recurved after flowering; wings roundish (large) covering the corolla and fruit; keel large, cucullate, connected with the lateral petals and filaments only at the base; stem ascending; leaves ovate-lanceolate, ciliolate.—*Walt. Car. p.* 179. P. pubescens, *Muhl. cat. p.* 66; *Nutt. gen.* 2. *p.* 87; *Ell. sk.* 2. *p.* 180; *DC. prodr.* 1. *p.* 330. P. Senega, var. rosea, *Michx.! fl.* 2. *p.* 53; *Pursh, fl.* 2. *p.* 465. P. Senega, *A. St. Hil. & Moq.-Tand. in mem. mus.* 17. *t.* 27. *f.* 17, *& t.* 28. *f.* 10.
Dry soils, South Carolina! to Florida and Louisiana! May–Aug.—♃ Root thick, tortuous. Stem about a foot high, simple or virgately branched. Leaves 1–1½ inch long, 3–4 lines broad, tapering at each end. Raceme 12–18-flowered; the lowest flowers usually remote: pedicels 2–4 lines long. The 2 inferior sepals united except at the summit. Wings one-fourth of an inch in diameter, at first deep rose-color, afterwards green. Lateral petals much shorter than the keel, dilated above, waved, bright rose-color: keel with a mere callosity at the apex instead of a crest. Filaments monadelphous; straight and unconnected above. Style a little dilated and tubular in the middle; the upper part curved, bearded on the under side below the glandular summit. Capsule oblong-obovate, emarginate, glabrous. Seed silky-villous. Caruncle about one-fifth as long as the seed, laterally compressed.—This most remarkable of all the N. American Polygalæ, and the only one destitute of a crest, resembles P. brizoides, *St. Hil.* Michaux strangely considered it a variety of P. Senega; and St. Hilaire & Moquin-Tandon have fallen into the same mistake, having figured the flowers and seed of this species from Michaux's specimen.

§ 6. ***Flowers few, large, terminal: posterior sepal concave-cucullate, with a gland at the base on the inside: keel cristate or callous at the apex.*** (CHAMÆBUXUS, Dill.)

22. *P. paucifolia* (Willd.): rhizoma creeping and branching, throwing up simple erect branches, leafy at the summit; leaves ovate, petioled; terminal flowers 2–3; crest fimbriate; radical flowers wingless.—*Willd. sp.* 3. *p.* 880;

Bart. fl. Amer.-Sept. 2. *t.* 56. *f.* 1; *DC. prodr.* 1. *p.* 331; *Ell. sk.* 2. *p.* 180; *Hook.! bot. mag. t.* 2852. *& fl. Bor.-Am.* 1. *p.* 86. P. purpurea, *Ait. Kew.* 4. *p.* 244. (not of *Nutt.*) P. uniflora, *Michx.! fl.* 2. *p.* 53. Triclisperma grandiflora, *Raf. speech.* 1. *p.* 7.

β. alba (Eights): flower solitary, smaller, white; stem somewhat leafy at the base. *Beck, bot. p.* 46.

Sphagnous swamps, often in mountainous situations, Saskatchawan River! to Georgia. *β.* Sand plains near Albany, *Dr. J. Eights.* May.—♃ Stalks 3–4 inches high, the lower part scaly. Leaves 4–5, about an inch long and half an inch or more wide. Flowers nearly ¾ of an inch long, deep rose-color; the pedicels 5–6 lines in length. Wings obovate, attenuate at the base, as long as the corolla. Lateral petals oblong, concave, united to the keel the greater part of their length: crest conspicuous, compound. Anthers bilabiate, imperfectly 2-celled. Style long, a little curved, slightly enlarging upward; the orifice irregularly 4-toothed, without hairs.—In the structure of the flowers this species strongly resembles P. Chamæbuxus of Europe.

‡ *Species of which the flowers and fruit are not sufficiently described.*

23. *P. Nutkana* (Moç. ic. ined.): racemes loose, 4–5-flowered; wings orbicular; capsule emarginate; stem somewhat shrubby at the base; leaves oval, petioled, acuminate at each end. *DC. prodr.* 1. *p.* 330.

Nootka, North-west America. *DC.*—There is not improbably some mistake about the habitat of this plant, as no species of the genus has been found by other observers on the Pacific coast of N. America.

24. *P. attenuata* (Hook.): racemes loose, attenuated at the apex; pedicels as long as the flowers; wings ovate, acute, concave, scarcely longer than the bearded keel; stem slender, elongated, angular, branched; leaves linear, opposite, rarely quaternate; upper ones alternate. *Hook. in jour. bot.* 1. *p.* 195. (not of *Nutt.*)

Jacksonville, Louisiana, *Drummond.*—① Stems very slender, erect, about a foot and a half high. Flowers greenish.—Habit of P. ambigua and P. sanguinea, but very different in size, and in the flowers and racemes. *Hook.* —We are unacquainted with this plant. The two species which it is said by Hooker to resemble are very unlike each other.

SUBORDER KRAMERIEÆ. *Mart.*

Sepals 5, or rarely 4, more or less irregular, much spreading, colored, deciduous, in æstivation imbricated in a triple series; the two outer ones anterior and posterior; the two intermediate ones lateral and alternate with the exterior pair; and the innermost usually smaller, situated either to the right or left of the posterior exterior sepal, sometimes wanting. Petals 5, or rarely 4, hypogynous, smaller than the sepals; the three superior with long and slender claws (the lamina sometimes abortive), severally alternating with the two (outer and inner) posterior and the lateral sepals; the claws sometimes united into a slender column, which alternates with the two posterior sepals when both are present, or is placed opposite to the exterior sepal when the other is abortive; the two lower petals (scales, abortive stamens? *Kunth*) opposite the lateral sepals (in K. cistoidea, ex *Hook. & Arn.* and in K. lanceolata!), or alternating with these and the anterior sepal (ex *A. St. Hil.*), sessile, fleshy, much smaller than the others and remote from them. Stamens 4, hypogynous, more or less unequal, declined;

two usually longer, alternate with the lateral unguiculate and the lower or fleshy petals; and two close together, alternate with the superior and the lateral petals: filaments thick, distinct, or the intermediate ones united, or (in K. lanceolata) all more or less united: anthers innate, fleshy, somewhat conical, 2-celled, opening at the apex by a single or double pore. Ovary 1- (or incompletely 2-) celled, densely hairy, gibbous: style subulate, ascending: stigma minute: placenta posterior or next the upper petal: ovules 2, pendulous from near the summit of the cell. Fruit between woody and leathery, globose, glochidate, indehiscent, 1-celled, 1–2-seeded. Seed roundish-ovate, anatropous, with a membranous testa: albumen none. Embryo straight: cotyledons roundish, plano-convex, fleshy.—Spreading or procumbent under-shrubs, much branched from the base, silky or hirsute with simple hairs: the root astringent and very bitter. Leaves alternate, exstipulate, simple or rarely 3-foliolate, entire. Peduncles terminal and axillary toward the summit of the branches, sometimes more properly racemed, 1-flowered, 2-bracteolate in the middle.

Hooker and Arnott (*bot. Beechey's voy. p.* 9. *t.* 5. 1831), in their elaborate account of the structure and affinities of Krameria, have corrected an important error in the character given by St. Hilaire (*mem. mus.* 17. *t.* 31, *and* 19, *p.* 336; *& in fl. Bras. merid.;* copied also in *Lindl. nat. syst. ed.* 2. 1836.), who describes the three unguiculate petals, and consequently the sepal accompanying the smaller internal one, as inferior or anterior; the structure according to this view being nearly the same as in Polygalaceæ. Hooker and Arnott remark that they are borne out in their view of the position of the parts of the flower (which supposes an inversion of the common arrangement in Polygalaceæ to take place), by Ruiz and Pavon, Jussieu, and Kunth: and their view is fully sustained by the structure of K. lanceolata, although, on account of the twisting of the peduncles, the petals often appear, at first sight, to be anterior. St. Hilaire is equally mistaken in considering the side of the ovary which is turned away from the 'lower' (that is, according to his view, the unguiculate) petals as placentiferous: but the affinities suggested by Hooker and Arnott are not borne out by the correction, unless the ovary is proved to be monocarpellary, which is probably not the case. The innermost sepal may either be situated on the left of the exterior upper sepal (as in K. grandiflora figured by St. Hilaire; the flower being brought into its true position), or more commonly on the right: in K. lanceolata we find this sepal sometimes dextral and sometimes sinistral.

2. KRAMERIA. *Lœfl.; Ruiz & Pav. prodr. fl. Per. & Chil. t.* 3; *A. St. Hil. l. c.* 19. *p.* 336; *Hook. & Arn. bot. Beechey's voy. p.* 8.

Character same as of the Suborder.

1. *K. lanceolata* (Torr.): branches mostly procumbent, many-flowered; lower cauline leaves oblong-lanceolate or obovate-lanceolate; the others narrowly linear; peduncles bibracteate above the middle, longer than the leaves; sepals 5, nearly equal; unguiculate petals 3, the claws united their whole length; stamens 4; filaments monadelphous.—*Torr.! in ann. lyc. New-York*, 2. *p.* 168.

In sandy soil on the upper part of the Arkansas or the Canadian, *Dr. James!* Prairies west of Fort Towson, *Dr. Leavenworth!* Texas, *Drummond!* Tampa Bay, E. Florida, in pine woods, *Dr. Burrows!* and *Dr. Leavenworth!* May.—Canescently hirsute. Stems numerous; branches slender, often a foot or more long. Lower cauline leaves about ¾ of an inch long, and 2 lines broad, sometimes obtuse; those of the branches usually longer. Peduncles on the prostrate branches secund, often twice the length of the leaves, forming as it were loose leafy racemes. Sepals purple within, ovate-lanceolate; the inner superior one mostly seated on the left. Upper petals a little shorter than the sepals; the claws united into a linear-filiform column; laminæ small, roundish-obovate, distinct, equal, of a rather firm texture: lower petals scarcely longer than the ovary, glabrous. Stamens shorter than the upper petals: filaments sometimes monadelphous at the base, sometimes united almost to the summit: anthers attenuate above, the apex produced into a short somewhat dilated membranaceous tube. Ovary densely hirsute and spinulose, imperfectly 2-celled in the youngest state by the projection of the placental ridge. Style rigid, quadrangular, a little declined. Immature pericarp 2-seeded; one of the seeds perhaps at length abortive.—Apparently more nearly allied to K. linearis, *Poir.* (K. pentapetala, *Ruiz & Pav.*), which has (according to the figure in the Flora Peruviana) the three upper petals united throughout; the compound lamina being merely 3-toothed. In a single flower of our species we observed the suppression of one of the upper petals, and in another case two of them were apparently wanting.

ORDER XVIII. VIOLACEÆ. *DC.*

Sepals 5, persistent, distinct or slightly united, and often auricled or produced at the base, imbricated in æstivation, the anterior and two posterior being exterior, and the two lateral ones interior. Petals 5, alternate with the sepals, hypogynous, marcescent or deciduous, on short claws, commonly unequal, the superior one (which by the resupination of the flower becomes inferior) usually spurred or saccate at the base: æstivation obliquely convolute. Stamens 5, alternate with the petals, inserted on the hypogynous disk or torus: anthers adnate, introrse, 2-celled, opening longitudinally: filaments dilated, elongated beyond the anthers; two of them generally furnished with a spur-like appendage or gland at the base. Ovary composed of 3 united carpels, 1-celled, with 3 parietal placentæ opposite the outer sepals: style usually declined, with an oblique cucullate stigma. Capsule 1-celled, 3-valved, loculicidal, bearing the many- (rarely few-) seeded placentæ on the middle of the valves. Seeds anatropous, usually with a distinctly marked chalaza, and a crustaceous testa. Embryo straight in the axis of fleshy albumen.—Herbs or shrubs. Leaves simple, petioled, alternate or rarely opposite, with an involute vernation: stipules persistent or marcescent. Flowers axillary.

1. NOISETTIA. *H. B. & K. nov. gen.* 5. *p.* 382; *DC. prodr.* 1. *p.* 290.

Sepals unequal, decurrent on the pedicel at the base; the 2 inferior ones often inequilateral. Petals very unequal, persistent; the superior (or apparently inferior) one large, somewhat unguiculate, with a long spur at the base. Stamens distinct: filaments short: anthers sagittate, the 2 anterior ones with a long subulate process at the base. Ovary with numerous ovules. Capsule ovate: placentæ linear.—Erect shrubs, with alternate leaves. Stipules in pairs. Flowers in axillary many-flowered racemes, or in crowded fascicles: pedicels with 2 bracteoles near the middle.

1. *N. acuminata* (DC.): leaves lanceolate, on short petioles, ciliate, toothed, the apex produced into a long entire point; pedicels solitary, rather shorter than the leaves. *DC. prodr.* 1. *p.* 290.
North America, *Michaux*, ex *DC.*—This plant is inserted on the authority of De Candolle, who states that he saw it in the herbarium of the Museum of Paris, under the name of Violæoides, *Michx. mss.* He asks whether it is not a variety of N. orchidiflora. It has doubtless been recorded as a native of N. America by mistake.

2. VIOLA. *Linn.; Gærtn. fr. t.* 112; *Gingins, in DC. prodr.* 1. *p.* 291.

Sepals unequal, more or less auricled at the base. Petals unequal; the superior (by resupination inferior) one spurred at the base. Stamens approximated, filaments distinct, dilated at the base; the two lower ones with appendages on the back which are concealed in the spur: anthers connate; the lobes diverging at the base. Ovary sometimes surrounded at the base by the concave torus, and then apparently half inferior. Capsule bursting elastically. Seeds horizontal, with an evident caruncle.—Low herbaceous plants, mostly perennial, with a short subterraneous stem or rhizoma (and then called acaulescent or stemless), or caulescent. Leaves alternate. Peduncles angular, solitary, 1-flowered, with two little bracteoles, recurved at the summit, so that the flower is resupinate or nodding.

§ 1. *Stigma rostrate; the beak more or less recurved, with a foramen at the extremity, margined or convex on the back: style attenuated from the summit to the base: stamens oblong: torus flattish: capsule often 3-sided: seeds numerous* (15-30). Gingins.

* *Acaulescent.*

1. *V. pedata* (Linn.): nearly glabrous; leaves pedately about 7-parted; segments linear-lanceolate, entire, or incisely 3-toothed at the summit; stigma large and thick, margined, obliquely truncate; beak very short; petals all glabrous.—*Michx.! fl.* 2. *p.* 151; *Schwein.! mon. Viol. in Sill. jour.* 5. *p.* 50; *Torr.! fl.* 1. *p.* 249; *DC. prodr.* 1. *p.* 291; *Le Conte! mon. Viol. in ann. lyc. New-York*, 2. *p.* 147. *Hook. fl. Bor.-Am.* 1. *p.* 74. V. digitata, *Pursh, fl.* 1. *p.* 171; V. flabellifolia, *Lodd. bot. cab. t.* 777.
Dry sandy woods and on rocky hills, British America, lat. 53°, to Florida! and west to Illinois!—Rhizoma thick. Leaves of a firm texture; the segments sometimes very narrow and laciniate. Stipules ciliate. Flowers very large, usually bright blue, sometimes pale or even white.

2. *V. delphinifolia* (Nutt.! mss.): "minutely pubescent; leaves pedately 7–9-parted; segments linear, 2–3-cleft; stigma thick, distinctly rostrate; the 2 superior petals pubescent; the 3 inferior emarginate; spur saccate, short.
"Prairies of Missouri, near Independence, not uncommon. March.—Rhizoma thick. Leaves pubescent on the margin and nerves; often finely divided, with numerous lobes. Stipules ovate-lanceolate, much acuminated, nearly entire. Peduncles, at the time of flowering, a little longer than the

leaves; the bracts minute and alternate. Sepals linear-lanceolate. Flowers a little smaller than in the preceding species, brilliant blue. Cusps of the anthers remarkably broad. Style short, clavate.—This species, on the Missouri, appears to take the place of V. pedata." *Nutt.*

3. *V. palmata* (Linn.): pubescent; leaves cordate, palmately or hastately lobed (rarely entire); lobes crenate and toothed, the middle one much larger; stigma triangular, the beak short; inferior petals bearded.—*Michx.! fl.* 2. *p.* 161; *Ell. sk.* 1. *p.* 300; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 249; *DC. prodr.* 1. *p.* 292; *Le Conte! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 74. V. heterophylla, *Le Conte! l. c.* V. ranunculifolia, *Juss. in Rœm. & Schult. syst.* 5. *p.* 352?

Low grounds, Canada! to New Orleans! west to Arkansas! May.—Rhizoma thick. Leaves variable in form and degree of pubescence; rarely almost glabrous, sometimes woolly; the early ones nearly or quite entire, and somewhat ovate and reniform; the base usually more or less hastate; under surface often purplish. Flowers middle-sized, bright blue, rarely white.

4. *V. cucullata* (Ait.): glabrous or rarely somewhat pubescent; leaves reniform-cordate, somewhat acute, cucullate at the base, crenately serrate; stigma triangular, margined; lower petals bearded.—*Ait. Kew.* 3. *p.* 288; *Pursh, fl.* 1. *p.* 172; *Bigel.! fl. Bost. p.* 60; *Ell. sk.* 1. *p.* 298; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 251; *Le Conte! mon. l. c.; DC. prodr.* 1. *p.* 292; *Hook. fl. Bor.-Am.* 1. *p.* 75. V. papilionacea, *Pursh, fl.* 1. *p.* 173; *DC. prodr. l. c.* V. obliqua, *Ait. l. c.; Schwein.! l. c.; Torr.! l. c.* V. affinis, *Le Conte! l. c.*

β. *congener:* villous; leaves broadly and somewhat reniformly cordate, crenately toothed, somewhat lobed.—V. congener, *Le Conte! l. c.*

γ.? *sororia:* nearly glabrous; leaves exactly cordate; flowers small.—V. sororia, *Willd. hort. Berol. t.* 72.

δ. *alba:* smoothish; flowers white.

ε. *reniformis:* glabrous; leaves broadly reniform.

Fields, woods, and wet meadows; Arctic America! to Florida! β. Georgia, *Le Conte!* γ. Dry hill-sides, Massachusetts to New Jersey! δ. Kentucky, *Short!* ε. Massachusetts, *Pickering!* April–May.—A very variable species. In wet or shady places it is perfectly glabrous, but in exposed situations more or less pubescent.

5. *V. septemloba* (Le Conte): glabrous and shining; leaves somewhat succulent, ovate-cordate; lowest ones entire, the others pedately 7-lobed with the middle lobe largest; lateral petals bearded. *Le Conte! l. c.*

Pine woods of the low country of Carolina and Georgia, *Le Conte!*—Peduncles longer than the leaves. Flowers generally blue, varying to white. Lower petal large, villous at the base, and, as well as the lateral ones, marked with deeper blue lines. *Le C.*—We fear that this species is only a variety of V. palmata.

6. *V. Selkirkii* (Goldie): leaves cordate, crenately serrate, minutely hirsute above, glabrous beneath, the sinus deep and nearly closed; stigma triangular, margined, with a distinct beak; spur nearly as long as the lamina, thick, very obtuse.—*Goldie! in Edinb. phil. jour.* 6. *p.* 319; *Hook.! fl. Bor.-Am.* 1. *p.* 75.

Hills about Montreal, Lower Canada, *Goldie, Dr. Holmes!* Mountains of Massachusetts, *Dewey!* Woody hill-sides in the Western part of the State of New-York!—Rhizoma somewhat creeping. Leaves numerous, forming a little tuft, on long petioles; lamina an inch broad, somewhat acute, or obtuse. Peduncles shorter than the leaves. Flowers much smaller than in V. cucullata: petals pale blue, obovate; spur very conspicuous, somewhat dilated at the extremity.—A very distinct species.

7. *V. sagittata* (Ait.): glabrous or a little pubescent; leaves oblong, acute, cordate-sagittate and incised at the base; stigma depressed, margined; inferior petal glabrous, the rest bearded.—*Ait. Kew.* 3. *p.* 287; *Pursh, fl.* 1. *p.* 172; *Nutt. gen.* 1. *p.* 147; *Schwein! l. c.; Torr.! fl.* 1. *p.* 250; *Ell. sk.* 1. *p.* 299; *DC. prodr.* 1. *p.* 294; *Le Conte! l. c.*

β. ovata: villous; leaves ovate, somewhat cordate, crenate, often lacerately toothed at the base; petiole margined.—V. ovata, *Nutt.! gen.* 1. *p.* 148; *Schwein.! l. c.; Torr.! l. c.; DC. prodr.* 1. *p.* 293; *Hook. fl. Bor.-Am.* 1. *p.* 76. V. primulifolia, *Pursh, fl.* 1. *p.* 172 (not of *Linn.*). V. Alleghaniensis, *Roem. & Schult. syst.* 5. *p.* 560; *DC. l. c.*

γ. emarginata (Nutt.): glabrous; leaves almost triangular, lacerately toothed near the base; petals emarginate, or bidentate. *Nutt. l. c.; Schwein.! l. c.* V. emarginata, *Le Conte! l. c.* V. dentata, *Pursh, fl.* 1. *p.* 172?

Hill-sides and fields, Canada! to Florida! west to Arkansas! *β.* New Jersey. April–May.—Rhizoma short and thick. Leaves usually a little pubescent on the upper surface, crenately toothed, often somewhat hastate at the base: petioles about as long as the lamina. Peduncles commonly longer than the leaves. Flowers middle-sized, bright blue. Spur short and very obtuse.

8. *V. villosa* (Walt.): pubescent; leaves plane (appressed to the ground), ovate or ovate-cordate, obtuse, crenately-toothed, sinus nearly closed; petals mostly villous, the lateral ones bearded.—*Walt. Car. p.* 219; *Ell. sk.* 1. *p.* 297; *Schwein. l. c.; DC. prodr.* 1. *p.* 295; *Le Conte! l. c.*

Sandy pine and oak woods, in the southern States! March–April.—Leaves very pubescent but not villous, rather thick, becoming nearly glabrous late in the season, variegated with purple veins, often entirely purple underneath. Flowers small, pale blue. *Le Conte.*—This species appears to be confined to the Southern States. We have not had an opportunity of examining the stigma.

9. *V. rotundifolia* (Michx.): leaves orbicular-ovate, cordate, somewhat crenate, nearly glabrous, the sinus closed; petiole pubescent (flowers yellow); stigma recurved at the apex, margined; lateral petals bearded; sepals obtuse; spur almost none.—*Michx.! fl.* 2. *p.* 150; *Nutt.! gen.* 1. *p.* 149; *Schwein.! l. c; Torr.! fl.* 1. *p.* 252; *Bigel.! fl. Bost. p.* 97; *DC. prodr.* 1. *p.* 295 (excl. syn. *Pursh*); *Le Conte! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 77.

β. pallens (herb. Banks): smooth; sepals acuminate. *DC. l. c.*

Shady rocky woods and hill-sides, New England! Western part of the States of New-York! and Pennsylvania! to the high mountains of Carolina, *Michaux! β.* Labrador, *Banks.* May.—Rhizoma rather thick, throwing out long stolons from the neck late in the season. Leaves spreading and appressed to the ground, at the flowering time about an inch in length, but later in the season 3–4 inches long and nearly three inches in diameter; the veins of the under surface slightly pubescent. Flowers small, pale-yellow: petals broadly ovate, sometimes emarginate, the lateral ones with 3 brown striæ; upper one small.—This may be the V. obliqua of Aiton, which is described as having straw-colored flowers ("petala straminea").

10. *V. blanda* (Willd.): leaves broadly cordate, slightly pubescent above, the sinus rounded; petiole glabrous; stigma capitate, depressed, margined, with a recurved beak; petals beardless (white); rhizoma creeping.—*Willd. hort. Berol. t.* 24; *Nutt.! gen.* 1. *p.* 149; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 254; *DC. prodr.* 1. *p.* 295; *Le Conte! l. c.* V. clandestina, *Pursh! fl.* 1. *p.* 173 (excl. syn. *Michx.*) V. obliqua, *Pursh, l. c.* V. amœna, *Le Conte! l. c.*

Wet meadows, Canada! to Pennsylvania! April–May—Leaves nearly flat, membranaceous, often reniform-cordate, sometimes rather acute when young, but at length rounded at the summit. Flowers small, odorous: petals obtuse; the inferior and lateral ones strongly veined with purple.—V. clandestina, *Pursh*, of which we have seen specimens in Lambert's herbarium, is only the apetalous state of this species, which like most other violets with subterraneous stems, puts forth, late in the season, stolons, which bear one or more apetalous flowers.

11. *V. primulæfolia* (Linn.): leaves oblong, somewhat cordate, the lamina abruptly decurrent on the petiole, the under surface and the peduncles a little pubescent; stigma capitate, margined (flowers white); lateral petals bearded; rhizoma creeping.—*Nutt.! gen.* 1. *p.* 149; *Schwein. l. c.; Ell. sk.* 1. *p.* 297 (excl. syn. *Pursh*); *Torr.! fl.* 1. *p.* 253; *DC. prodr.* 1. *p.* 293; *Le Conte! l. c.*

β. acuta: leaves ovate, glabrous; petals acute, lateral ones nearly glabrous.—V. acuta, *Bigel.! fl. Bost. p.* 95; *Torr.! fl. l. c.*

Wet meadows, Massachusetts! to Florida!—west to Kentucky, *Short. β.* Moist grounds, near Boston, *Bigelow!* April–June.—Plant usually 2–3 inches high. Leaves 1–2 inches long, shorter than the peduncles, mostly somewhat cordate at the base, but sometimes merely truncate: petiole shorter than the lamina. Flowers odorous: spur short, very obtuse.

12. *V. lanceolata* (Linn.): glabrous; leaves lanceolate, attenuate at the base into a long petiole, rather obtuse, obscurely crenately serrate; stigma with a short recurved beak, somewhat quadrangular and margined; petals (white) beardless.—*Michx.! fl.* 2. *p.* 150; *Nutt.! gen.* 1. *p.* 150; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 253; *DC. prodr.* 1. *p.* 293; *Le Conte! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 76.

Wet meadows and swamps, Canada! to Florida! west to Texas! *Drummond!* April–May.—Rhizoma creeping; often bearing very long creeping stolons with an apetalous flower on a short peduncle at each joint. It sometimes produces perfect flowers late in the season.

13. *V. palustris* (Linn.): leaves reniform-cordate; stipules broadly ovate, acuminate; stigma margined; sepals ovate, obtuse; capsule oblong, triangular; seeds ovate, dark green.—*DC. prodr.* 1. *p.* 294.

β. Pennsylvanica (DC.): flowers purple; petals somewhat orbicular.—*DC.! l. c.*

Summits of the White Mountains of New Hampshire, *Dr. Boott! Mr. Oakes!* Wet places among the Rocky Mountains, and in Oregon, *Nuttall!*—Rhizoma articulated, creeping, somewhat scaly. Flowers resembling those of V. cucullata, but considerably smaller and of a pale lilac color.

* * *Caulescent: stigma convex, not margined.*

14. *V. Langsdorffii* (Fischer): leaves roundish-cordate, nearly glabrous; stipules ovate, setaceously acuminate, the lowest ones with bristly teeth; stem at length elongated, oblique at the base; inferior petals somewhat rhomboidal; spur broadly saccate, very obtuse. *DC. prodr.* 1. *p.* 296; *Hook. fl. Bor.-Am.* 1. *p.* 77.

Island of Unalaschka, *Chamisso.*

15. *V. striata* (Ait.): glabrous; stem angular, oblique, branching; leaves roundish-cordate or somewhat ovate, upper ones a little acuminate; stipules oblong-lanceolate, dentate-ciliate; stigma tubular, recurved, pubescent at the summit; spur somewhat produced.—*Ait. Kew.* (*ed.* 1.) 3. *p.* 291; *Pursh! fl.* 1. *p.* 174; *Nutt.! gen.* 1. *p.* 150; *Ell. sk.* 1. *p.* 301 (excl. syn. *Michx.* & *Walt.*); *DC. prodr.* 1. *p.* 297; *Le Conte! l. c.* V. ochroleuca, *Schwein.! l. c.; Torr.! fl.* 1. *p.* 255; *Hook. fl. Bor.-Am.* 1. *p.* 77. V. repens, *Schwein. l. c.* V. Lewisiana,* *DC. l. c.* V. debilis, *Michx.! fl.* 1. *p.* 150?

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* Gingins and Candolle mistook the Christian name of Mr. Schweinitz for the surname.

Wet meadows, chiefly in mountainous districts, Canada! to Georgia! west to Kentucky! and Illinois. April–May.—Plant 6–12 inches high. Leaves 1–1½ inch broad, crenately toothed: stipules conspicuous. Flowers large, sulphur-yellow: peduncles longer than the leaves: lateral petals bearded.—Perhaps V. debilis of Michaux should rather be referred to V. Muhlenbergii; but his specimens of that species are imperfect, and we were unable to determine them with certainty.

16. *V. Muhlenbergii* (Torr.): glabrous; stem assurgent or somewhat prostrate; leaves reniform-cordate, the upper ones a little acuminate, crenately serrate; stipules lanceolate, deeply serrate-ciliate; stigma tubular, papillose, pubescent; spur produced.—*Torr.! fl.* 1. *p.* 256. V. Muhlenbergiana, *Ging. in DC. prodr.* 1. *p.* 297; *Le Conte! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 78. V. uliginosa & asarifolia, *Muhl.! cat. p.* 25. V. debilis, *Pursh! fl.* 1. *p.* 174 (excl. syn.). V. punctata & V. uliginosa, *Schwein.! l. c.* V. Labradorica, *Schrank; DC. l. c.*

β. albiflora (Hook.): stems very short; leaves cordate-ovate or ovate, densely pubescent; flowers white.—*Hook. l. c.*

γ. multicaulis: stems numerous, prostrate; leaves cordate-reniform, obtuse, rather thick, minutely pubescent on both sides; stigma very acute, recurved; lateral petals distinctly bearded.

Swamps, and in dry shady places, Labrador! and British America (lat. 59°) to New Orleans! west to the Rocky Mountains! *β.* British America, *Richardson.* *γ.* Rocks near Kentucky River, *Short.* April–May.—Stem 6–10 inches long, branched from the base, when old decumbent and geniculate. Veins of the under surface of the leaves sometimes pubescent. Flowers middle-sized, rather pale blue: lateral petals usually glabrons. Spur often more than half the length of the petal.—Very near V. canina of Europe; a species which is said by De Candolle to occur on the N. W. Coast, but which has not been found by any of the recent travellers in that region. The var. *γ.* may prove to be a distinct species. When it first begins to flower the stem is very short, but at length it throws off prostrate branches, which produce tufts of leaves and flowers at the extremity.

17. *V. longipes* (Nutt.! mss.): "glabrous or slightly pubescent; stem short, somewhat decumbent; leaves ovate-cordate, obtuse, more or less decurrent at the base, repandly crenate; stipules linear-lanceolate, remotely spinulose-denticulate or lacerately ciliate; peduncles elongated; stigma slightly rostrate, slender, papillose; spur produced, obtuse. V. debilis, *Nutt.! in jour. acad. Philad.* 7. *p.* 15, not of *Michx.*

"Borders of woods and in bushy plains near the Oregon, and in the Rocky Mountains.—Root creeping. Stem 1–2 inches long. Leaves on petioles which are 2–3 times as long as the lamina, dotted with minute brown glands: stipules conspicuous, 6–8 lines long. Peduncles overtopping the leaves: bracts above the middle, linear-subulate. Flowers as large as in V. Muhlenbergii, deep blue. Appendages of the anthers filiform." *Nutt.*—The V. canina, *Richards. in app. Frankl. journ.* is supposed by Nuttall to be a variety of this species.

18. *V. rostrata* (Pursh): glabrous; stems numerous, assurgent, terete; leaves cordate, the upper ones acute, serrate; stipules lanceolate, serrate-ciliate; stigma glabrous, tubular, erect, minute; petals beardless; spur longer than the corolla.—*Pursh, fl.* 1. *p.* 72; *Nutt.! gen.* 1. *p.* 150; *Schwein. l. c.; Torr.! fl.* 1. *p.* 256; *DC. prodr.* 1. *p.* 298; *Le Conte! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 78.

Moist rocky situations, Canada! to Virginia; west to Ohio and Kentucky. May.—Stems 4–6 inches high. Sinus of the leaves open. Flowers large, pale blue. Petals beardless, slightly veined with deep blue. Spur slender and rather acute, sometimes nearly twice the length of the petals. Appendages of the anthers filiform, extending nearly the entire length of the spur.

19. *V. adunca* (Smith): stem ascending, somewhat simple; leaves ovate and cordate-ovate, coriaceous, crenate, covered with distinct brown dots; stipules lanceolate, acuminate, dentate-ciliate; stigma somewhat reflexed, glabrous; sepals linear-lanceolate; petals scarcely longer than the spur, two of them bearded; peduncles much longer than the leaves. *Smith, in Rees, cycl.; Hook. fl. Bor.-Am.* 1. *p.* 79.

North-west coast, *Menzies, Douglas.*—Leaves of a dusky hue. Flowers deep purple-blue. Spur obtuse, straight or uncinate. *Hook.*

§ 2. *Stigma capitate, bearing a tuft of hairs on each side, with a minute somewhat lateral foramen: style compressed, clavate: stamens oblong, approximate: torus rather flat: capsule often triangular.* Gingins.

20. *V. Nuttallii* (Pursh): stem erect; leaves ovate-lanceolate, somewhat pubescent or nearly glabrous, undivided, nearly entire, attenuated into a long petiole; stipules lanceolate, entire; sepals lanceolate, acuminate; petals ovate-lanceolate; spur very short; peduncles shorter than the leaves.—*Pursh, fl.* 1. *p.* 174; *Schwein.! l. c.; DC. prodr.* 1. *p.* 300; *Le Conte! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 9. *t.* 26; *Nutt.! in jour. acad. Philad.* 7. *p.* 16.

Sandy plains of the Missouri, *Nuttall!* Saskatchawan, *Drummond;* sources of the Oregon, *Mr. Wyeth!*—Rhizoma ascending. Stems numerous, short. Leaves sometimes obscurely sinuate-toothed. Flowers small, pale yellow. "Pubescence of the depressed stigma very minute." *Nutt.*

21. *V. linguæfolia* (Nutt. mss.): "pubescent; stem scarcely any; leaves oblong-lanceolate, somewhat serrate, on very long petioles; bracts of the peduncles minute; stigma thick and clavate, with scarcely any beak; sepals long and narrow, linear; petals linear-oblong, somewhat emarginate.

"Kamas Prairie, near the sources of the Oregon, *Mr. Wyeth.*—Flowers yellow, larger than in the preceding. Intermediate between V. Nuttallii and the succeeding species." *Nuttall.*

22. *V. præmorsa* (Dougl.): hirsute or very pubescent; stems erect, short; leaves ovate-lanceolate, repandly denticulate or nearly entire; stipules lanceolate, entire; stigma clavate-capitate, conspicuously pubescent above, minutely beaked; petals obovate; spur very short; peduncles longer than the leaves.—*Lindl. in bot. reg. t.* 1254; *Hook.! fl. Bor.-Am.* 1. *p.* 80.

Dry plains of the Oregon, and on the Wahlamet, *Nuttall! Douglas.* Fort Vancouver, *Dr. Scouler!* Plant 6 inches high, usually densely hirsute with short spreading hairs. Flowers rather large, yellow, on peduncles which are mostly shorter than the leaves. Lower petal emarginate, veined with brown.

23. *V. pedunculata:* somewhat pubescent; stem short; leaves rhombic-ovate, crenately toothed, abruptly narrowed at the base into a petiole; stipules linear-lanceolate, entire; stigma somewhat triangular, emarginate; spur very short; appendages of the inferior stamens wing-form, a little produced at the base.

California, *Douglas!*—Lamina of the leaves scarcely an inch long, rather thick, with coarse obtuse teeth. Peduncles 2–3 times as long as the leaves. Flower large, deep yellow. Sepals oblong, obtuse. Petals broadly obovate; the 2 upper ones with conspicuous claws; lateral ones bearded at the base. Summit of the filaments rounded. Stigma with a minute lip on the lower edge.

24. *V. hastata* (Michx.): nearly glabrous; stem simple, erect; leaves

deltoid-lanceolate, hastate and rhombic-ovate, repandly toothed; stipules ovate, acute; stigma somewhat incurved, emarginate; sepals lanceolate, acute; spur very short.—*Michx.! fl.* 2. *p.* 149; *Ell. sk.* 1. *p.* 302; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 257; *DC. prodr.* 1. *p.* 300; *Le Conte! l. c.* V. gibbosa, *Raf.; DC. l. c.*

Shady woods, particularly in mountainous regions, Pennsylvania! to Florida!—Rhizoma long and creeping. Stem 4–10 inches high. Radical leaves dilated and truncate at the base. Peduncles shorter than the leaves. Flowers smaller than in V. pubescens, yellow: lateral petals slightly bearded. Stigma hairy on each side, with a deep furrow on the top.

25. *V. tripartita* (Ell.): hirsute; stem simple, leafy only at the summit; leaves deeply 3-parted, the lobes lanceolate, toothed. *Ell. sk. p.* 2. 302; *DC. prodr.* 1. *p.* 300. V. hastata, *β. Le Conte, l. c.*

Near Athens, Georgia.—Stem about a foot high; the young plant villous. Leaves divided to the base, sometimes trifoliolate, very hairy; segments sometimes acuminate. Stipules lanceolate, villous, entire or serrulate. Peduncles long, slender, bracteate with 2 minute alternate scales near the middle. Flowers yellow. Sepals acute. The lower petal beautifully streaked with purple. *Elliott.*

26. *V. pubescens* (Ait.): villous; stem erect, naked below; leaves broadly cordate, toothed; stipules ovate, somewhat toothed; sepals oblong-lanceolate; spur very short, a little saccate.—*Ait. Kew.* (*ed.* 1.) 3. *p.* 290; *Nutt.! gen.* 1. *p.* 150; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 257; *Le Conte! l. c.* V. Pennsylvanica, *Michx.! fl.* 2. *p.* 149.

β. eriocarpa (Nutt.): capsules densely villous. *Nutt.! l. c.; Torr.! l. c.* V. eriocarpa, *Schwein.! l. c.; DC. l. c.*

γ. scabriuscula: branching from the root; stems decumbent, nearly glabrous; leaves smaller, somewhat scabrous, but hardly pubescent; capsule glabrous, or villous.—V. scabriuscula, *Schwein.! mss.*

Dry woods, Canada! to Georgia! west the Council Bluffs on the Missouri. γ. Pennsylvania, *Darlington!* Kentucky, *Dr. Short!* April–May.—Stem 6–12 inches high, with naked stipules at the base. Leaves 2–3 on the upper part of the stem, somewhat acuminate, rarely almost glabrous. Peduncles shorter than the leaves. Flowers middle-sized, yellow: petals handsomely striate. Appendages of the stamens forming a broad dorsal wing or keel, not produced at the base. Stigma globose, not rostrate, strongly bearded on each side.

27. *V. glabella* (Nutt.! mss.): "nearly glabrous; stem erect, naked below; leaves reniform-cordate, with a short acumination, crenately serrulate; stipules very small, membranaceous, nearly entire; sepals linear-lanceolate; spur very short, slightly saccate.

"Shady woods of the Oregon. April.—Leaves with a very shallow sinus, scarcely at all cuneate at the insertion of the petiole. Flowers rather larger than in V. pubescens, bright yellow, the upper ones almost fastigiate: petals somewhat veined at the base. Stigma globose, hairy on the sides." *Nuttall.*—Very near V. pubescens.

28. *V. ocellata:* pubescent; leaves on very long petioles, cordate-triangular, crenately toothed; stipules lanceolate, somewhat ciliate; peduncles shorter than the leaves; sepals linear; petals oblong-obovate (lateral ones spotted); spur very short; appendages dorsal, winged, not produced at the base.

California, *Douglas!*—Stem nearly a foot high, simple, terete. Leaves 1½ inch wide, slightly cordate, or truncate at the base; uppermost ones somewhat acuminate and deltoid: petioles 3–4 inches long. Stipules small, scarious. Flowers on the summit of the stem, middle-sized: peduncles about an inch long. Upper petals purple, the others pale yellow; lateral ones with a purple spot below the middle, slightly bearded on the claw. Style much attenuated downward: stigma strongly bearded on each side.

29. *V. Canadesnis* (Linn.): nearly glabrous; leaves broadly cordate, acuminate, serrate, the nerves pubescent; stipules ovate-lanceolate, entire; peduncles shorter than the leaves; sepals subulate; petals elliptical-oblong; spur very short, saccate; capsule very obtuse.—*Pursh! fl.* 1. *p.* 174; *Schwein.! l. c.; Torr.! fl.* 1. *p.* 255; *DC. prodr.* 1. *p.* 301; *Le Conte, l. c.; Hook. fl. Bor.-Am.* 1. *p.* 80.

β. corymbosa (Nutt.! mss.): flowers 5–6, somewhat corymbosely fastigiate, sometimes white.

Shady woods, generally in mountainous districts, Hudson's Bay! to Carolina! and west to the Pacific. *β.* Woods, Alabama, *Nuttall!* May–July.—Stem from 6 inches to 2 feet high, nearly simple. Flowers middle-sized. Petals only slightly twisted, pale within, violet externally; lateral ones bearded. Seeds roundish-ovate, brown.

[illegible],

30. *V. sarmentosa* (Dougl.) stems creeping, filiform; stolons floriferous; leaves cordate, with the sinus open, crenate, somewhat pubescent above, glabrous and punctate beneath; style rather slender; appendages of the anthers somewhat produced; peduncles about as long as the leaves; spur very short.—*Hook. fl. Bor.-Am.* 1. *p.* 80.

Hilly wooded places, N. W. America, *Douglas*; pine woods of the Oregon near the junction of the Wahlamet, *Nuttall!* and near Wallawallah, *Mr. Townsend!*—Leaves about ¾ of an inch in diameter; the petiole longer than the lamina. Flowers yellow: petals oblong-obovate, entire; lateral petals slightly bearded.

31. *V. chrysantha* (Hook.): somewhat pubescent; stems cæspitose, short; leaves bipinnatifid; segments linear; sepals ciliate; inferior petal without a spur.—*Hook.! ic. t.* 49.

Monterey, California, *Douglas!*—Stems partly subterranean, several in a cluster from one root. Leaves on long petioles; the segments very narrow and rather acute. Stipules linear lanceolate, entire. Peduncles rather longer than the leaves. Flowers very large: petals broadly obovate, glabrous; the 2 superior ones purplish; the others bright yellow with dark lines at the base; inferior one slightly saccate at the base. Upper part of the filaments broad and rounded: appendages dorsal, wing-like, not produced at the base. Style clavate, curved: stigma obtuse, slightly hairy below the summit.

§ 3. *Stigma urceolate, hairy on each side; aperture large, furnished with a lip on one side: style attenuated downward: ovary partly immersed in the concave torus: seeds very numerous.*—Gingins.

32. *V. tricolor* (Linn.): root somewhat fusiform; stems branching, diffused; lower leaves ovate, cordate; stipules runcinately pinnatifid, the middle lobe crenate; petals with short claws; spur thick, obtuse, not produced; appendages short; seeds oblong-ovate. *DC. prodr.* 1. *p.* 303.

α. arvensis (DC.): annual; stems assurgent; upper leaves spatulate-ovate; petals scarcely longer than the calyx, yellowish, blue, or spotted with purple. *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 81. V. bicolor, *Pursh! fl.* 1. *p.* 175; *Nutt. gen.* 1. *p.* 151; *Schwein.! l. c.* V. arvensis, *Ell. sk.* 1. *p.* 302. V. tenella, *Muhl.! cat. p.* 25; *Torr.! fl.* 1. *p.* 257; *Le Conte! l. c.*

Dry rocky hills New-York! to Georgia, Missouri, and Arkansas! May.—Plant nearly glabrous. Stem somewhat triangular. Stipules very large. Petals pale blue, yellowish towards the base (sometimes none); lateral ones bearded. Capsule glabrous.

‡ *Doubtful species.*

33. *V. radicans* (DC.): rhizoma horizontal, fibrillose; stigma with a short beak, margined; leaves ovate-lanceolate, abruptly attenuate at the base, or somewhat cordate, serrate; stipules linear, setaceously subulate, with bristly serratures; sepals linear, acute; lateral petals obovate, beardless?, the lowest one smaller; spur almost none. *DC. prodr.* 1. *p.* 297.

South Carolina, *Michaux fil.* (ex *De Cand.*).—Is this a variety of V. Muhlenbergii?

3. SOLEA. *Gingins, in DC. prodr.* 1. *p.* 306.

Sepals nearly equal, not auricled, (reflexed after flowering, *Gingins*). Petals unequal; the lowest one 2-lobed and somewhat gibbous at the base; the rest emarginate. Stamens cohering; the lowest 2 bearing a gland above the middle. Stigma uncinate, with a pore at the extremity of the point. Capsule somewhat 3-sided, surrounded at the base by the concave torus. Seeds 6–8, very large.—An herbaceous perennial herb, with alternate cauline leaves, and small flowers on solitary or geminate axillary peduncles.

Scarcely a distinct genus from the succeeding.

S. concolor (Ging.)—*DC. prodr.* 1. *p.* 306. Viola concolor, *Forst. in Linn. trans.* 6. *p.* 308. *t.* 28; *Nutt.! gen.* 1. *p.* 151; *Schwein.! l. c.; Torr.! fl. l. c.* V. stricta, *Spreng. pug. rar.* 1. *p.* 22. Ionidium Sprengelii, *Roem. & Schult. syst.* 5. *p.* 401.

Wet shady woods, western part of the State of New-York! to Carolina; west to Missouri! April–May—Plant somewhat pubescent or hairy. Stem simple, leafy, a foot or more high. Leaves oblong-lanceolate, somewhat erect, attenuated at each extremity. Peduncles very short, recurved. Flowers greenish. Sepals about the length of the corolla. Lowest petal twice as large as the others. Filaments produced a little above the anthers: nectariferous glands sessile, confluent. Stigma glabrous, not margined. Capsule nearly an inch long. Seeds whitish, globose-obovate.

4. IONIDIUM. *Vent.* (in part); *DC. prodr.* 1. *p.* 307.

Sepals small, unequal, not auricled, membranaceous on the margin. Petals unequal; the inferior one much larger than the others, somewhat unguiculate, with a dilated lamina, a little concave or gibbous at the base. Stamens approximate; filaments somewhat unguiculate, bearing the anthers low down; the 2 anterior ones usually with a nectariferous gland or appendage at the base. Capsule few-seeded.—Herbaceous or suffruticose humble plants. Leaves alternate or opposite. Peduncles solitary, 1-flowered, articulated, usually with 2 bracteoles above the middle.

1. *I. stipulaceum* (Nutt.! mss.): nearly glabrous, annual (?); leaves alternate; lower ones oblong; upper ones oblong-linear and linear, entire; stipules large, linear-lanceolate; sepals very acute; limb of the inferior petals reniform, twice as long as the calyx; appendages of the lower stamens subulate.

Plains of Red River, Arkansas, *Nuttall!* and on the Arkansas near Fort Towson, *Dr. Leavenworth!* Texas, *Drummond!* May–June.—Plant 8–12 inches high. Leaves about 1½ inch long, sometimes all except the uppermost oblong or oblong-lanceolate, sessile, scabrous on the margin; upper ones usually much narrower, acute. Stipules nearly half as long as the leaves. Flowers 2 lines long: peduncles slender, much shorter than the leaves, without bracteoles, articulated above the middle. Sepals nearly equal, strongly carinate. Lower petal contracted into a claw in the middle, dilated again and somewhat gibbous at the base; limb emarginate, strongly veined; lateral petals incurved, oblong; superior ones much the smallest. Filaments contracted at the base into a short but distinct claw; upper portion ovate and somewhat acute; the lowest two with a small subulate appendage pointing upward. Ovary triangular: style slender: stigma small, not rostrate. Capsule 3-sided, glabrous, about 6-seeded. Seeds ovate-globose, glabrous, light brown.

2. *I. lineare* (Torr.): somewhat pubescent; stem branched; leaves linear, narrow, entire; stipules linear, minute. *Torr.! in ann. lyc. New-York*, 2. p. 168.

On the Red River, Arkansas, *Dr. James!*—Leaves an inch or more in length, scarcely more than a line long, pale green, scabrous on the margin. Stipules one-third the length of the leaves. Capsules glabrous.—Of this plant we have but a single imperfect specimen, which was collected by Dr. James in Long's 1st Expedition. It may prove to be a variety of I. stipulaceum, but it differs considerably from that species.

ORDER XIX. DROSERACEÆ. *DC.*

Sepals 5, persistent, equal, sometimes united at the base, imbricated in æstivation. Petals 5, alternate with the sepals, nearly or quite hypogynous, marcescent. Stamens distinct, marcescent, usually as many as the petals and alternate with them, rarely 2–3 times as many: filaments capillary or flattened: anthers extrorse or innate; cells distinct, or somewhat connivent above, opening longitudinally, or rarely by a terminal pore. Ovary composed of 2–5 united carpels, 1-celled: placentæ parietal, or filling the base of the cell: styles 2–5, usually distinct or united at the base merely, each 2-parted or multifid and pencil-shaped; sometimes all united into one. Capsule 2–5-valved, loculicidal, with the valves placentiferous in the middle, or indehiscent with the placenta at the base, many- (rarely few-) seeded. Seeds anatropous: testa sometimes arilliform. Embryo short, at the base of cartilaginous or fleshy albumen.—Herbs, or rarely suffrutescent plants (growing in swamps or wet places). Leaves alternate or crowded, entire, commonly furnished with glandular hairs, with a circinate vernation (except Dionæa): stipules none, or in the form of a tuft or fringe of scarious hairs at the base of the petioles.

1. DROSERA. *Linn.; Lam. ill. t.* 220; *Gærtn. fr. t.* 61.

Stamens 5. Styles 3–5, 2-parted; the divisions somewhat thickened toward the apex, or multifid. Capsule subglobose or ovoid, usually 3-valved at the top: valves placentiferous to the summit. Seeds very numerous, in

2–5 rows on each placenta.—Small herbs, growing in sphagnous or sandy swamps (the American and European species acaulescent, with a rosulate tuft of leaves, and simple scapes which are circinate when young; racemes mostly unilateral). Leaves furnished with numerous long reddish glanduliferous hairs.—*Sun-dew.*

The pollen-grains in D. filiformis are connected by minute threads; as in Œnothera. All the N. American species have usually three 2-parted or 2-cleft styles.

1. *D. brevifolia* (Pursh): leaves forming a close tuft, broadly cuneiform, very obtuse, on petioles scarcely longer than the limb; petals (rose-color) obovate, more than twice the length of the calyx; styles deeply 2-parted, the divisions a little dilated and membranaceous above; seeds oval (the testa not arilliform), minutely ribbed.—*Pursh! fl.* 1. *p.* 211; *Nutt.! gen.* 1. *p.* 141; *DC. prodr.* 1. *p.* 318.

β. major: leaves on longer petioles. *Hook. jour. bot.* 1. *p.* 194.

Borders of sandy ponds (occasionally in exsiccated places, *Nutt.*), N. Carolina! to Florida! and Louisiana! *β.* Louisiana, *Drummond;* Apalachicola, Florida, *Dr. Chapman!*—Tuft of leaves about an inch in diameter. Scape filiform, in flower 2–4, in fruit sometimes 6–8 inches high, 2 or 6–10-flowered: flowers nearly half an inch in diameter when expanded. Sepals and pedicels often minutely glandular when young.—Our specimen from Apalachicola, which we refer to *β.* major of Hooker, has the less broadly cuneiform limb of the leaves scarcely one-third as long as the petiole, and the scape almost capillary: it will perhaps prove to be a distinct species.

2. *D. rotundifolia* (Linn.): leaves orbicular, spreading, abruptly attenuate into the long hairy petiole; petals (white) oblong; styles very short, 2-parted, with subclavate divisions; seeds linear, with a loose, arilliform testa.—*Eng. bot. t.* 867; *Michx.! fl.* 1. *p.* 186; *Ell. sk.* 1. *p.* 375; *Nutt.! gen. l. c.; DC. prodr.* 1. *p.* 318; *Hook.! fl. Bor.-Am.* 1. *p.* 81. D. capillaris, *Poir.* (?); *DC. l. c.*

Sphagnous swamps, from the Arctic Circle and Unalaschka to Florida! and Alabama! June–Aug.—② (① *DC.*) Scape 4–8 or 10 inches high, 5–10-flowered: raceme sometimes bifid. Capsule oblong.

3. *D. longifolia* (Linn.): leaves cuneate-oblong, erect-spreading, attenuate into the long and slender naked petiole; caudex ascending or decumbent, often elongated; scapes declined at the base (petals white, short); styles very short, the divisions slightly thickened; seeds oblong, slightly punctate, the testa not arilliform.—*Eng. bot. t.* 868; *Michx.! fl.* 1. *p.* 186; *Nutt.! gen. l. c.; Torr.! fl.* 1. *p.* 331 (*excl. syn.* Goldie.). D. Americana, *Muhl.! cat. p.* 33. D. intermedia *γ.* Americana, *DC. l. c.* D. foliosa, *Ell. sk.* 1. *p.* 375; *DC. l. c.*

In sphagnous and very wet sandy swamps, Canada! to Alabama! and Louisiana. June–Aug.—♃ Scapes 3–8 inches high, several-flowered, at length about twice the length of the leaves. Capillary stipules conspicuous. Capsule obovate-oblong.

4. *D. Anglica* (Huds.): leaves linear-spatulate, erect: petioles elongated (scarcely longer than the limb, DC.); seeds with an arilliform testa. *Hook.* —*Huds. fl. Angl. p.* 135; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 81.

Near Cumberland House, lat. 54°, *Richardson;* and N. W. Coast, *Menzies*, ex *Hook.*—Scape erect, twice the length of the leaves.

5. *D. linearis* (Goldie): leaves linear, very obtuse, erect, on slender naked petioles; scapes 1–3-flowered, at first shorter, at length a little longer than the leaves; seeds oval-oblong, smooth and shining, the testa not arilliform.—*Goldie, in Edinb. phil. jour.* 6. *p.* 325; *Hook.! fl. Bor.-Am.* 1. *p.* 82. *t.* 27. *A.*

Lake Simcoe, *Goldie;* near Jasper's Lake in the Rocky Mountains, *Drummond!* Keweena Point, Lake Superior, *Dr. Houghton!* July–Aug. —(① *Hook.*) Leaves 3–5 inches long; the petiole rather exceeding the limb; which is about 2 lines wide throughout. Capsule oval, more than twice the length of the calyx.

6. *D. filiformis* (Raf.): leaves filiform and very long, nearly erect, glandular-hairy, naked at the lower extremity (petiole?), densely woolly at the base; scape longer than the leaves, many-flowered; petals (purple) obovate, erosely denticulate, much longer than the glandular calyx; styles 2-parted to the base, the segments filiform and slightly thickened upwards; seeds acute at each end, minutely punctate, the testa not arilliform.—*Raf. in med. rep.* 2. *p.* 360, *& in Desv. jour. bot.* 1. *p.* 227; *Pursh! fl.* 1. *p.* 211; *Nutt.! gen.* 1. *p.* 142; *DC. l. c.; Torr.! fl.* 1. *p.* 332; *Hook. bot. mag. t.* 3540. D. tenuifolia, *Muhl.! cat. p.* 33; *Willd. enum. p.* 340.
Wet sandy places, from Plymouth, Massachusetts (*Bigelow!*) and Long Island! to the Pine barrens of New-Jersey! and Delaware (*Rafinesque.*) Also Apalachicola, Florida, *Dr. Chapman!* Aug–Sept.—♃ Leaves 6–10 inches long. Scape a foot or more high, 8–20-flowered. Flowers larger than in the other species. Cells of the anther linear-oblong, nearly distinct, at length separable from the rhombic-lanceolate connectivum.—The flowers in all the specimens from Florida are nearly twice the size of the northern plant; being about an inch in diameter when fully expanded.

2. DIONÆA. *Ellis, in act. Ups.* 1. *p.* 98. *t.* 8.

Stamens 10–15: anthers innate. Style 1, thick: stigmas 5, connivent, fimbriately many-cleft. Capsule membranaceous, indehiscent, but tearing open irregularly (5-valved, *DC.*), 1-celled. Seeds numerous (20–30), partly immersed in the scrobiculate cellular placenta which fills the base of the capsule.—A glabrous perennial (yellowish-green) herb. Flowers umbellate at the extremity of a slender scape. Leaves (not circinate in vernation) radical, rosulate and spreading; petiole winged and foliaceous, terminating in an articulated circular spinulose-ciliate lamina, which is very sensitive, suddenly closing when the upper surface is touched.— *Venus's Fly-trap.*

Arnott places Dionæa in his suborder Parnassieæ; but we prefer to retain it in Droseraceæ proper, with which it agrees more nearly in habit, and from which it differs in no important character except in the vernation, and in the placenta which fills the bottom of the ovary; the style, moreover, is just such an one as would be produced by the cohesion of the multifid styles of some species of Drosera nearly to the summit. On the other hand, it differs from Parnassia in most of the peculiar characters of that genus, viz: the perigynous stamens, a portion of which are abortive or transformed, the sessile stigmas opposite the placentæ, and the albuminous seeds.

D. muscipula (Ellis)—*Linn. mant. p.* 238; *Michx.! fl.* 1. *p.* 267; *Vent. hort. Malmais. t.* 29; *Walt. Car. p.* 144; *Bot. mag. t.* 785; *Ell. sk.* 1. *p.* 479; *Nutt.! gen.* 1. *p.* 278; *DC. prodr.* 1. *p.* 320; *Curtis! in Bost. jour. nat. hist.* 1. *p.* 123.
Sandy bogs, New-Bern, and N. Carolina, *Croom!* and from the mouth of Cape Fear River to Fayetteville, *Curtis!* Also along the lower branches of the Santee River in S. Carolina, *Elliott.* April–May.—Scape 6–12 inches high, about 10-flowered. Petals white, cuneate-obovate, marked with parallel simply forked veins, marcescent. Filaments capillary: anthers roundish. Ovary depressed-globose, slightly 5-lobed: stigmas fimbriate within. Seeds

obovate, smooth and shining, black, marked with an inconspicuous raphe. Embryo oblong, at the base of the cartilaginous albumen.—"The sensitiveness of the lamina," according to Mr. Curtis, "resides only in the 3 or 4 hair-like processes of its upper surface, so placed that an insect can hardly traverse it without interfering with one of them; when the two sides suddenly collapse and enclose the prey, the fringe or hairs of the opposite sides of the leaf interlacing like the fingers of the two hands clasped together." See the further remarks of Mr. Curtis *in loc. cit.*

SUBORDER PARNASSIEÆ. *Arn.* (excl. Dionæa.)

Sepals 5, persistent, imbricated in æstivation; more or less united at the base and coherent with the base of the ovary. Petals 5, somewhat perigynous, persistent, alternate with the petals: venation simple. Stamens, perigynous, persistent, consisting of an outer sterile series, somewhat indefinite in number, united in 5 phalanges situated opposite the petals; and an inner series of 5 fertile stamens alternating with the petals: anthers fixed by the base, introrse. Ovary composed of 4 united carpels, 1-celled, with 4 sessile stigmas opposite the parietal placentæ. Capsule 1-celled, 4-valved, loculicidal. Seeds very numerous, anatropous, with an arilliform winged testa: albumen none. Embryo straight, with a slender radicle and minute cotyledons.—Glabrous perennial herbs (growing in wet places.) Leaves mostly radical or nearly so, petioled, exstipulate, entire, with obscure converging veins. Scapes elongated, 1-flowered: flower white.

This suborder, as characterized above, includes the anomalous genus Parnassia alone; which was placed by Jussieu, along with Drosera and Reseda, among "Genera Capparidibus affinia;" and is referred to Droseraceæ by Richard, De Candolle, and (as a suborder) by Arnott; to Saxifragaceæ (with which they agree very well, except in the completely syncarpous ovary and the position of the stigmas,) by Brown and Lindley; to Hypericaceæ by Don; and (with a mark of doubt) to Tamariscineæ by Bartling. The curious scale-like organs terminating in three or more threads or setæ with glandular tips, are doubtless transformed stamens; but their situation (*opposite* the petals and *exterior* to the fertile stamens) as well as their structure renders it evident that they are not composed each of a single stamen, as has been stated, but of 3 or more, as we have described them. That they are so considered by Don, is manifest from the view he takes of the affinity of the genus, although the work which contains his remarks is not at this moment before us.

3. PARNASSIA. *Tourn. inst. t.* 127; *Linn.; Gærtn. fr. t.* 60.

Character same as of the Suborder.

1. *P. palustris* (Linn.): scales [phalanges of sterile stamens] with numerous (9–13) very slender setæ; leaves all cordate, the cauline one [when present] sessile. *Hook.—Fl. Dan. t.* 584; *DC. prodr.* 1. *p.* 320; *Richards.! app. Frankl. journ. p.* 10; *Hook.! fl. Bor.-Am.* 1. *p.* 82.

Labrador! and Newfoundland to Rocky Mountains, lat. 52°–56°, and Kotzebue's Sound; south to Canada! and the south shore of Lake Superior, *Dr. Pitcher!*—Scapes slender, 3–8 inches high, naked or with a single somewhat clasping leaf. Leaves, sepals &c. marked, though not constantly, as in all the species, with brownish dots. Petals, in American specimens, 3–5-nerved, ½–⅓ longer than the oblong-lanceolate sepals. Setæ pellucid, with minute glandular tips.—Our American specimens are all much smaller than the ordinary European forms, and have fewer veins in the sepals and fewer setæ to the scales: they agree almost wholly with authentic specimens of P. palustris β. tenuis, *Wahl*, from Lapland.—We take the characters of this and the two following nearly allied species from Hooker, not being perfectly satisfied of their distinctness. The setæ in these species do not appear to furnish well-marked characters: we observe 7–12 in the American P. palustris, 5–8 in P. parviflora, *Hook.*, and 3–5 in P. Kotzebuei.

2. *P. parviflora* (DC.): very slender; scales with about 5 very slender setæ; radical leaves ovate, attenuate into a petiole; the cauline one linear-oblong, sessile. *Hook.—DC. prodr.* 1. *p.* 320; *Hook.! fl. Bor.-Am.* 1. *p.* 82, excl. syn. P. palustris β. *Wahl.*

Sandy banks of rivers among the Rocky Mountains, *Drummond!* ex *Hook.* N. America, *DC.*, who described from a specimen in the Banksian herbarium.—Scapes from a span to a foot high, with a single bract-like leaf. Flowers considerably smaller than in P. palustris: petals slightly unguiculate. *Hook.*

3. *P. Kotzebuei* (Cham. & Schlecht.): scales with 3 slender setæ; radical leaves (and cauline one when present) subcordate-ovate, petioled; petals about 3-nerved, shorter than the calyx. *Hook.—Cham. & Schlecht. in Linnæa*, 1. *p.* 549; *Hook.! l. c. t.* 28; *Hook. & Arn. bot. Beechey*, *p.* 122.

Unalaschka and Kotzebue's Sound, *Chamisso;* Rocky Mountains, between lat. 52° & 56° (*Drummond*) to Bear Lake and the shores of the Arctic Sea, *Richardson!*—Scapes slender, naked or with a single leaf near the base, 3–6 inches high. Leaves membranaceous, very small. Sepals elliptical-lanceolate. Petals elliptical. Anthers subrotund. Ovary oval-globose, nearly a third part inferior.—Hooker, and also Cham. & Schlecht., expressly state the stigmas to be four and the capsule 4-valved, as in the rest of the genus, and this we find to be the case in our specimens; but the figure in the *Flora Boreali-Americana* exhibits several views of a pentacarpellary capsule, probably a monstrosity.

4. *P. Caroliniana* (Michx.): scales of 3 stout and thick sterile filaments, distinct to near the base, about the length of the fertile stamens; petals subsessile, more than twice the length of the calyx, with strong greenish veins; leaves (coriaceous) orbicular-ovate or somewhat elliptical-ovate, subcordate, the cauline one usually low down and clasping.—*Michx. fl.* 1. *p.* 184; *Bot. mag. t.* 1459; *Pursh, fl.* 1. *p.* 208; *Torr.! fl.* 1. *p.* 326; *DC. l. c.; Hook. l. c.* P. palustris, *Pursh, l. c.* P. Americana & ovata, *Muhl.! cat. p.* 32. P. ovata β. Belvisii, *DC. l. c.?*

β. leaves larger, not rarely orbicular-reniform; sterile filaments exceeding the fertile stamens; pollen orange-color. *Hook. jour. bot.* 1. *p.* 194. P. grandifolia, *DC. l. c.*

Wet meadows and along shady streams, &c. Canada! to Florida! west to the Mississippi. β. New-Orleans, *Drummond.* July–Aug.—Leaves about 7-nerved, varying from orbicular-subreniform to ovate-cordate and broadly oval with no sinus at the base. Scape 8–18 inches high. Flower an inch in diameter.—We have seen no Southern specimens which agree with the β. of Hooker in the sterile stamens, &c.; but Elliott describes them as "nearly the length of the corolla," and "filaments very short."

5. *P. asarifolia* (Vent.): scales of 3 sterile filaments; petals broadly ovate and very obtuse, naked and abruptly unguiculate at the base; leaves reniform; the cauline one reniform-cordate or somewhat orbicular, sessile.—*Vent. Malmais. t.* 39; *Pursh, fl.* 1. *p.* 208; *Muhl.! cat. p.* 32; *DC. l. c.*

High mountains of Virginia! and N. Carolina! (v. s. in herb. *Muhl.* & herb. *Schweinitz.*) July–Aug.—Leaves and flowers rather larger than in P. Caroliniana.—A well-marked species.

6. *P. fimbriata* (Banks): scales broadly cuneate, fleshy, carinate at the middle within, crenately 5-toothed at the apex; radical leaves on very long petioles, biauriculate-reniform; the cauline one very small, cordate, sessile above the middle of the slender scape; petals fimbriate at the base, somewhat unguiculate. *Hook.—Kœn. ann. bot.* 1. *p.* 391; *DC. prodr.* 1. *p.* 320; *Hook.! bot. misc.* 1. *p.* 43. *t.* 23, *& fl. Bor.-Am.* 1. *p.* 84.

N. W. Coast, *Menzies*. Elevated swamps in the Rocky Mountains, lat. 52°–56°, *Drummond!* and lat. 41°, *Nuttall!*—Rhizoma somewhat creeping. Scape 1–1½ foot high. Flowers smaller than in P. Caroliniana.

ORDER XX. CISTACEÆ. *Juss.*

Sepals 5, persistent; the two outer ones usually much smallest or sometimes wanting; the three inner imbricated and often somewhat twisted in æstivation. Petals 5 (rarely 3 or by abortion none), hypogynous, mostly very fugitive, usually crumpled in æstivation and twisted in a direction contrary to that of the sepals. Stamens indefinite, or rarely few, hypogynous, distinct: anthers short, innate. Ovary composed of 3–5 united carpels: styles and stigmas mostly united into one. Capsule 3–5-valved, loculicidal, 1-celled with parietal nerviform placentæ, or imperfectly 3–5-celled with dissepiments proceeding from the middle of the valves and bearing the placentæ at or near the axis; endocarp often separating from the exocarp. Seeds few or numerous, orthotropous (very rarely somewhat anatropous). Embryo nearly straight or spirally convolute, in the midst of mealy or somewhat corneous albumen.—Herbs or low shrubs: pubescence simple or stellate. Leaves simple and usually entire, opposite or alternate (the lowest always opposite), with or without stipules. Flowers perfect, yellow, white, or red, showy or sometimes inconspicuous.

Mr. Spach, in his paper entitled '*Description of some new Cistaceæ*, published in the first volume of the Companion to the Botanical Magazine, announces the somewhat curious fact, that a few Cistaceæ have anatropous seeds, but without mentioning in what plants this structure is found. We find anatropous seeds in Helianthemum Fumana, H. procumbens, H. lævipes, H. juniperinum, and H. glutinosum (which are all the species of the section *Fumana* of which we have specimens in proper state for the examination); also in H. alpestre. In the two first-named species the funiculus is adherent only for about half the length of the seed, which is thus as it were heterotropous or amphitropous; in the others it adheres almost to the (organic) apex of the seed, but in H. lævipes and H. glutinosum it may readily be separated from the testa. The seeds of H. glutinosum, when thrown into water are seen to be covered with a very dense coat of mucus, enveloping a great number of spiral threads which uncoil when the mucus dissolves; as in Collomia linearis.

1. HELIANTHEMUM. *Tourn. inst. t.* 128; *Gærtn. fr. t.* 76; *DC.*

The two exerior sepals usually much smaller and bract-like, or wanting. Petals 5 or rarely 3, sometimes abortive, fugitive. Stigmas 3, large, fimbriolate, more or less united into one. Capsule triangular, 3-valved, few- or many-seeded: placentæ filiform, in the axis of the valves or on imperfect dissepiments more or less projecting into the cell. Embryo inflexed.

The North American species belong to the section LECHEOIDES, *Dunal;* having the exterior sepals minute, a very short straight style, and strictly parietal placentæ: they are almost suffruticose, with mostly stellular pubescence, and exstipulate slightly petioled alternate leaves, except the lowest, which are usually opposite; and the evolution of the (yellow) flowers is centrifugal. Excepting H. scoparium from California, and H. Carolinianum, which hardly belong to this section, they differ from the European species in producing two kinds of flowers: viz. 1st, Terminal or dichotomal flowers, usually preceding the others, on slender peduncles, with conspicuous petals and numerous stamens. 2nd, Smaller flowers, usually clustered in axillary cymes or glomerules, scarcely ever fully expanding, with minute petals or often none, fewer stamens, and smaller and fewer-seeded capsules. The two kinds often occur on the same specimens; but the latter are produced later in the season, and in sterile soil often to the exclusion of the others, giving to the plant the appearance of Lechea, so much so as to have deceived Linnæus, whose L. major is well known to have been founded upon such a state of Helianthemum Canadense. Mr. Spach has noticed this peculiarity in our species, and separated them as a distinct genus under the name of HETEROMERIS.

1. *H. Canadense* (Michx.): stem at first simple; the primary or terminal large and petaliferous flowers few or solitary, on peduncles scarcely longer than the flower, the erosely emarginate petals about twice the length of the calyx; secondary flowers axillary, very small, nearly sessile, solitary or somewhat clustered on short leafy branches, the petals very small or none, and the outer sepals usually wanting; leaves oblong or somewhat lanceolate, with revolute margins (when dry), and, as well as the sepals and often the branches and peduncles, canescently tomentose.—*Michx.! fl.* 1. *p.* 308; *Pursh! fl.* 2. *p.* 363; *Ell. sk.* 2. *p.* 4; *Hook. fl. Bor.-Am.* 1. *p.* 72; *Darlingt. fl. Cest. p.* 313. H. ramuliflorum, *Michx. l. c.; Pursh! l. c.; Ell. l. c.* H. corymbosum, *Pursh*, fide *herb.!* H. rosmarinifolium, *Pursh! l. c.* Cistus canadensis, *Willd.; Bigel. fl. Bost. ed.* 2. *p.* 212. Lechea major (the apetalous state), *Linn. amœn. acad.* 3. *p.* 11 (excl. fig.), fide *Smith*, & *in herb. Gronov.!*

In dry sandy soils, Canada! to Florida! June (April in the Southern States) to Sept.—Stem 6–18 inches high. Capsules of the apetalous flowers not larger than a pin's head, few-seeded: seeds angular, scabrous-punctate.

2. *H. polifolium:* primary or petaliferous flowers (small) terminating the slender stem and the numerous short branches, on filiform peduncles many times longer than the flower, the broadly cuneiform petals a little exceeding the calyx; secondary flowers very small, apetalous, 3–6-androus, clustered in lateral cymules on the floriferous branches, at first glomerate and nearly sessile, at length on pedicels as long as the (5-sepalous) calyx; leaves linear or linear-oblong, with revolute margins, beneath (as also the sepals and peduncles) tomentose-canescent.—H. capitatum, *Nutt.! in herb. acad. Philad.* Heteromeris polifolia, *Spach, in compan. to bot. mag.* 1. *p.* 291.

Prairies and dry sterile places, Arkansas, *Nuttall! Dr. Leavenworth!* and Texas, *Drummond!* June–Aug.—Stem 9–12 inches high, minutely canescent. Primary flowers polyandrous, usually solitary at the extremity of the branches, scarcely half the size of those of H. Canadense. Seeds smooth and shining, several in the petaliferous, but very few in the apetalous flowers.

3. *H. corymbosum* (Michx.): stem branching from the base, canescent; flowers in terminal fastigiate cymes; the primary ones (rather large) on filiform peduncles much longer than the flower, the petals nearly twice the length of the calyx; the secondary flowers in glomerate cymules, mostly apetalous, 3–10-androus; sepals tomentose-villous, the inner ones oblong-

ovate, acute, the outer linear and obtuse; leaves oblong-lanceolate, with somewhat revolute margins (when dry), softly canescent beneath.—*Michx. ! fl.* 1. *p.* 307; *DC. prodr.* 1. *p.* 269; *Ell. sk.* 2. *p.* 5. Heteromeris cymosa, *Spach, l. c.*

Sterile places near the coast, from New Jersey to S. Carolina and Florida! April–May, and again in Oct. *Ell.*—About a foot high, very tomentose when young. Outer sepals about the length of the inner ones. Capsules of the primary flowers many-seeded; of the secondary ones rather few-seeded. Flowers nearly the size of those of H. Canadense.—A well-marked species, readily distinguished by having, among other characters, the apetalous flowers not on leafy branches, but with the others forming a compound terminal cyme. Crocanthemum Carolinianum Spach, [illegible] p. 14.

4. *H. Carolinianum* (Michx.): stem simple or branching from the base, hirsute; flowers (large, all polyandrous and petaliferous ?) on long solitary peduncles, axillary and terminal; sepals villous-hirsute, the outer ones linear and shorter, the inner ovate-lanceolate acuminate and much longer than the capsule; leaves at first softly villous, oblong or oval, slightly denticulate; the lower ones crowded near the base of the stem, obovate.—*Michx. ! fl.* 1. *p.* 307; *Pursh, fl.* 2. *p.* 364; *Vent. hort. Cels. t.* 74; *Ell. sk.* 2. *p.* 5; *DC. prodr. l. c.* Cistus Carolinianus, *Walt. Car. p.* 152.

In dry rather fertile soils, S. Carolina to Georgia! and Louisiana! May–June.—Nearly herbaceous, 5–12 inches high. Leaves larger than in the other American species, on short but distinct petioles. Flowers few: petals larger than in H. Canadense. Seeds minutely papillose-scabrous.

5. *H. scoparium* (Nutt.! mss.): "slightly pubescent, decumbent and much branched below; flowers paniculate-racemose [all petaliferous and polyandrous]; sepals ovate, acuminate, the outer ones minute and subulate; petals 5, cuneate-oblong, longer than the calyx; capsule about 6-seeded; leaves scattered, linear-subulate, exstipulate."—H. ——— ? (near H. tripetalum) *Hook. & Arn. bot. Beechey, p.* 135.

"Dry hills around Monterey, California; common.—About a foot high. Leaves an inch long, scarcely half a line wide. Flowers small, yellow, disposed in a kind of paniculate raceme [the evolution of the flowers in the branches of the inflorescence, as usual in the genus, centrifugal]. Seeds smooth." *Nutt.*—Evidently allied to H. tripetalum, *Moç. & Sesse*, from Mexico, as far as can be judged from the brief character in *DC. prodr.*; but there are 5 petals.

2. LECHEA. *Linn.*; *Gærtn. fr. t.* 129; *DC. prodr.* 1. *p.* 285.

Lechea & Lechidium, *Spach.*

The two exterior sepals much narrower and bract-like. Petals 3, inconspicuous, lanceolate, somewhat persistent. Stamens 3–12. Stigmas 3, nearly sessile, somewhat united, fimbriate-laciniate, depressed. Capsule 3-valved, incompletely 3-celled, or 1-celled by the obliteration of the imperfect dissepiments: placentæ (internal valves, *Linn.*) ovate or roundish, nearly as broad as the valves, membranaceous or somewhat crustaceous, fixed to the dissepiments by the middle of the posterior face, about 2-seeded. Seeds borne on the posterior face of the placentæ near the base, one on each side of the dissepiment, about the length of the valves. Embryo nearly straight.—Perennial herbs, often suffruticose at the base, much branched, with numerous very small racemed or somewhat paniculate flowers: petals brownish-purple. Leaves exstipulate, entire, alternate, opposite, or verticillate (often on the same specimen), sessile or slightly petioled, minutely puncticulate.

An American genus; L. verticillata, *Willd.* being a species of Elatine, according to Wight and Arnott.

§ 1. *Placentæ membranaceo-crustaceous, fragile, separating from the very thin dissepiments; the margins revolute & enveloping the seed.* (LECHEA, Spach.)

1. *L. major* (Michx.): stem erect, hairy; young branches villous, the radical ones prostrate and tufted; cauline leaves elliptical, mucronulate; those of the radical branches roundish and very small; of the floral branches lanceolate; flowers very numerous, densely clustered in short unilateral racemes; pedicels very short; capsule depressed-globose and somewhat 3-sided.—*Michx.! fl.* 1. *p.* 76; *Muhl. cat. p.* 15; *Pursh! fl.* 1. *p.* 90; *Bigel. fl. Bost. p.* 47; *Torr.! fl.* 1. *p.* 160, not of *Linn.* (which is an apetalous form of Helianthemum Canadense.) L. minor, *Linn. amœn. acad.* 3. *p.* 10, *ex Smith, in Rees, cycl.* L. villosa, *Ell. sk.* 1. *p.* 184; *DC. prodr.* 1. *p.* 285; *Beck, bot. p.* 36; *Darlingt. fl. Cest. p.* 96. L. Drummondii, *Spach, in compan. to bot. mag.* 1. *p.* 284?

In dry woods, &c., Canada! to Florida, and west to the Mississippi. July–Sept.—Stem 1–2 feet high, stout, much branched above. Radical branches slender; the small leaves much crowded or fascicled, villous with white hairs, especially on the margins and midrib. Cauline leaves also often crowded, opposite or alternate, occasionally verticillate. Flowers and capsules much smaller than in L. minor. Seeds oval.—We think it preferable, as well as more in accordance with the rules of nomenclature, to retain the name L. major for this species; since it is not only the generally received, but the oldest name, the Linnæan plant, as also the figure of Lamarck, being excluded; unless indeed we follow Smith, and call the largest species of the genus L. minor.

2. *L. thymifolia* (Pursh): frutescent; stems decumbent at the base, densely and paniculately branched above, canescently villous (especially the branches) with white appressed hairs; leaves very numerous and often verticillate; cauline ones oblanceolate or linear; those of the short procumbent and very villous radical branches imbricated, elliptical, very small; those of the floriferous branches narrowly linear, with revolute margins, erect and crowded; clusters terminal and axillary near the extremity of the simple floriferous branches, 2–6-flowered; pedicels very short; calyx tomentose-canescent; capsule globose.—*Pursh, fl.* 1. *p.* 91; *Smith, in Rees, cycl.?; Torr.! fl.* 1. *p.* 161, not of *Michx.*

In sand on the sea-coast, Massachusetts! and Long Island! to Virginia, &c. July–Sept.—Stem stout, a foot high, branched above in a pyramidal manner; the branches often verticillate, short and simple, leafy to the summit.—Intermediate in some respects between L. major & L. minor, but more nearly allied to the former.

3. *L. minor* (Lam.): stem erect, minutely pubescent with appressed hairs; radical branches procumbent and hairy, or often none; leaves linear, the cauline ones often somewhat oblong; scattered or sometimes verticillate; racemes nearly simple; the flowers on distinct often appressed pedicels; capsules ovoid-globose.—*Lam. ill. t.* 52. *f.* 1?; *Pursh, fl.* 1. *p.* 91; *Bigel. fl. Bost. p.* 48; *Torr.! fl.* 1. *p.* 161; *Hook. fl. Bor.-Am.* 1. *p.* 73; *Darlingt. fl. Cest. p.* 97, not of *Linn. & Smith.* L. racemulosa, thymifolia, and tenuifolia, *Michx.! l. c.*

α. stem tall and slender, simple or paniculately branched above; radical branches procumbent, hairy; leaves linear-lanceolate or somewhat oblong; racemes often panicled at the extremity of the branches; capsules rather large.—L. minor, *Pursh, l. c. &c.*

β. stem low, slender, diffusely branched above; radical branches mostly none; leaves narrowly linear; racemes slender, nearly naked; pedicels somewhat appressed.—L. racemulosa, *Michx.! fl.* 1. *p.* 77; *Pursh! l. c.; Ell. sk.* 1. *p.* 184; *DC. l. c.* L. thesioides, *Spach! in compan. to bot. mag.* 1. *p.* 284.

γ. stem low, very much branched; leaves linear-subulate; flowers very few, near the extremity of the branches; capsules rather large.—L. tenuifolia, *Michx.! l. c.; Pursh, l. c.*

In dry gravelly or sandy places, Canada! to Louisiana! and Arkansas! *β.* & *γ.* Southern States to Texas! June–Sept.—Stem 6–18 inches high, often decumbent at the base. Flowers and capsules larger than in L. major. Leaves slightly ciliate. Seeds oblong.

§ 2. *Placentæ firm and crustaceous, the margins not revolute: dissepiments persistent, separating from the valves but cohering with the placentæ.*—LECHIDIUM, Spach.

4. *L. Drummondii:* decumbent and much branched at the base, slightly pubescent; leaves linear-subulate, scattered; racemes filiform, terminating the numerous branches, loosely flowered; flowers unilateral, on capillary spreading and at length reflexed pedicels; capsule globose-3-sided.—Lechidium Drummondii, *Spach! l. c. p.* 287.

Dry places in small prairies, Texas, *Drummond! Dr. Leavenworth!* June–July.—The decumbent base of the stem slightly ligneous; the slender branches 6–8 inches high. Pedicels twice the length of the flowers, often supra-axillary, much longer than the setaceous bracts. Petals purple. Stamens 3–4, *Spach,* "more than 10," *Leavenworth, in litt.* Seeds ovate.

Lechea juncifolia, "foliis radicalibus teretibus, calyce nullo," *Walt. Car. p.* 83. is wholly unknown; but doubtless belongs to some other order.

3. HUDSONIA. *Linn. mant.; Gærtn. fr. t.* 210; *Nutt. gen.* 2. *p.* 4.

Sepals united at the base; the two outer ones subulate and often minute; the 3 inner oblong or oval, colored within, spreading in flower, connivent into a tube in fruit. Petals 5, oblong-obovate, somewhat fugitive. Stamens 9–30. Style filiform, straight: stigma minute. Capsule oblong-obovate, slightly 3-sided, 1-celled, 3-valved: placentæ parietal, nerviform, in the axis of the valves. Seeds 1–2 (or by abortion fewer) from the base of each placenta, on short filiform ascending funiculi, minutely granulated. Embryo (in H. ericoides!) slender, spirally convolute in the midst of the thin albumen.—Low diffusely and excessively branched shrubby plants, each forming a dense tuft. Leaves small, subulate or acerose, densely imbricated, exstipulate, tomentose, persistent. Flowers yellow, on slender peduncles or almost sessile, terminating the short branches.

1. *H. ericoides* (Linn.): canescently pubescent, erect with the branches decumbent; leaves subulate, slightly spreading; peduncles exserted, longer than the flowers; sepals acutish; capsules oblong, slightly pubescent, about 3-seeded.—*Linn. mant. p.* 74; *Willd. hort. Berol. t.* 15; *Pursh! fl.* 2. *p.* 364; *Nutt.! gen. l. c.; DC. prodr.* 1. *p.* 285.

Sandy woods, Nantucket! Long Island! and New Jersey! to Virginia. May.—About a span high: primary branches elongated; floral ones very short. Leaves 3–4 lines long, rather scattered on the old stems. Stamens about 15.

2. *H. montana* (Nutt.): minutely pubescent; stems decumbent; leaves filiform-subulate, partly imbricated; peduncles longer than the flowers; calyx campanulate, lanuginous; sepals acuminate, the outer ones longer and subulate; capsules villous, mostly 3-seeded. *Nutt.! gen.* 2. *p.* 5; *DC. l. c.*
On the highest summits of the mountains of N. Carolina; particularly on Table Rock, of the Catawba Ridge, *Nuttall!*—Stem 3–5 inches high. Leaves about a line longer than in H. ericoides. Peduncles about an inch long in fruit. Flowers more than twice the size of those of the preceding species; the capsules 3 times the size, and furnished with distinct central septiform sutures. Stamens 15–30. *Nutt.*

3. *H. tomentosa* (Nutt.): canescently tomentose; leaves minute, ovate-oblong, acute, very closely imbricated; flowers nearly sessile (the peduncles not longer than the leaves); sepals obtuse; capsules ovate, glabrous (about 3-ovuled), commonly 1-seeded.—*Nutt.! gen.* 2. *p.* 5; *Bigel. fl. Bost. ed.* 2. *p.* 213; *DC. l. c.; Sweet, Cist. t.* 57; *Hook. fl. Bor.-Am.* 1. *p.* 73. H. ericoides, *Lam. ill. t.* 407?; *Richards. app. Frankl. journ. ed.* 2. *p.* 18.
Shore of the ocean from Massachusetts! to Maryland! and of all the Great Lakes, from Lake Champlain to Slave Lake, and on St. Peter's River! May.—Stems ascending, intricately branched: branches short. Leaves about a line long. Flowers smaller than in the other species. Outer sepals very minute. Stamens 9–18.

ORDER XXI. HYPERICACEÆ. *Juss.*

Sepals 4–5, distinct or united at the base, often unequal, persistent: æstivation imbricated. Petals as many as the sepals and alternate with them, hypogynous, marcescent or deciduous; veins oblique: æstivation twisted. Stamens hypogynous, usually very numerous and more or less cohering at the base into three or more parcels, rarely definite and monadelphous or quite distinct, often persistent: anthers fixed by the middle, introrse. Ovary composed of 2–5 united carpels: styles slender, distinct or partly united, persistent: stigmas simple or somewhat capitate. Fruit baccate, or capsular with 2–5 valves and a septicidal dehiscence, either (completely or incompletely) 2–5-celled with the placentæ in the axis or 1-celled with the placentæ nearly or quite parietal. Seeds very numerous and minute, or rarely few, straight or a little curved, anatropous: testa coriaceous; the tegmen membranaceous or rarely fleshy: albumen none. Embryo cylindrical, straight.—Herbs, shrubs, or trees, having a resinous juice, variously and copiously dotted with glands. Leaves opposite, entire, exstipulate, copiously dotted with immersed pellucid resinous glands, and often (as also the sepals and petals) sprinkled with black glandular dots or lines. Inflorescence various. Flowers commonly yellow.

The so-called albumen of Sarothra is more properly only the thickened inner tegument of the seed, which readily separates from the testa in all the species we have examined, and is more or less fleshy in several.

TRIBE I. HYPERICEÆ. *Chois.*

Fruit capsular. Seeds terete or roundish.—Herbs, or shrubby plants. Leaves mostly sessile.

1. ASCYRUM. *Linn.; Chois. prodr. Hyper., & in DC. prodr.* 1. *p.* 55.

Sepals 4; the 2 exterior usually broad and foliaceous; the inner much smaller. Petals 4. Filaments slightly united at the base into several parcels. Styles 2–3 (rarely 4), sometimes united. Capsule 1-celled, 2–3 valved: placentæ parietal.—Shrubby or suffruticose plants. Leaves sprinkled with black dots. Flowers 1–3 at the summit of the branches, yellow: a pair of opposite subulate bracteoles a little below each flower.

1. *A. Crux-Andreæ* (Linn.): stem much branched at the base, assurgent; leaves obovate-oblong or linear-oblong, obtuse; flowers cymulose or solitary, on short pedicels; exterior sepals ovate; the inner ones very minute; petals linear-oblong; styles 2, at length distinct.—*Pursh, fl.* 2. *p.* 373; *Ell. sk.* 2. *p.* 22; *DC. prodr.* 1. *p.* 555. A. multicaule, *Michx. fl.* 2. *p.* 77.

β. *angustifolia* (Nutt.): leaves oblong-linear, crowded; exterior sepals elliptical-ovate, acute. *Nutt. gen.* 2. *p.* 16.

Sandy pine woods, New Jersey! to Florida! and Louisiana! β. Carolina, *Nuttall!* July.—Stem 8–12 inches high (in the southern plant taller, '2–3 feet', *Elliott*), distinctly ancipital above. Leaves variable in width, usually obovate-oblong and about ¾ of an inch in length, crowded; the lower ones in robust specimens 1¼ inch long. Flowers usually in threes: pedicles 2–3 lines long: bracteoles very close to the flower, alternating with the exterior sepals. Inner sepals scarce a line long, petaloid. Petals pale yellow, approximated by pairs opposite the exterior sepals, and a little exceeding them in length. Stamens about 20, half as long as the corolla. Styles erect, very short. Capsule ovate-oblong, compressed, 2-valved. Seeds roundish-oblong, attached to slightly prominent parietal placentæ. The placentæ coalesce at the base into a spongy body, which fills up the lower part of the capsule, enclosing a number of perfect seeds.

2. *A. pumilum* (Michx.): very low; leaves small, oval, obtuse; pedicels long, reflexed; styles 2, united or distinct. *Michx. fl.* 2. *p.* 77; *Ell. sk.* 2. *p.* 21; *DC. prodr.* 1. *p.* 555. A. pauciflorum, *Nutt. gen.* 2. *p.* 15; *DC. l. c.*

Dry pine barrens, Georgia, *Michaux*, *Elliott*, & *Nuttall.* March–April.—Stem somewhat woody, slightly winged, 6–10 inches long. Leaves linear-oblong. Flowers solitary. Peduncles ½–1 inch long. Exterior sepals ovate, somewhat acute. Petals obovate, a little longer than the calyx. Filaments not distinctly polyadelphous. Styles united. Capsule ovate. *Elliott.* Style unusually long. *Nuttall.*—Among our numerous specimens of Ascyrum from the Southern States, there is not one that agrees in all respects with either Michaux's or Elliott's description of this plant. In many respects it seems closely allied to the preceding species, especially with the dwarf form of the plant so common in New Jersey; but in that the peduncles are never long and reflexed.

3. *A. stans* (Michx.): stem ancipital and somewhat winged, straight, erect, dichotomously branched at the summit; leaves oblong, closely sessile, somewhat clasping, obtuse, a little glaucous; flowers on erect peduncles; exterior sepals cordate-orbicular; inner ones lanceolate, one-third shorter than the others; styles 3 (rarely 4); capsule ovate, rather acute.—*Michx. fl.* 2. *p.* 77; *DC. prodr.* 1. *p.* 555. A. hypericoides, *Linn.?; Willd. sp.* 3. *p.* 1473?; *Ell. sk.* 2. *p.* 22.

β. obovatum (Chapman! mss.): dwarf; leaves obovate, somewhat narrowed at the base.

Borders of sandy swamps in pine barrens, New Jersey! to Florida! Alabama! and Louisiana! *β.* Middle Florida, *Dr. Chapman!* July–August.—Stem 1–2 feet high, usually simple except at the summit; in *β.* 4–5 inches high. Leaves 12–15 lines long, 4–5 lines wide. Flowers usually three together, more than twice as large as in the preceding species: pedicels 4–6 lines long. Exterior sepals slightly acute: inner ones somewhat petaloid. Petals ovate, twice as long as the calyx. Stamens very numerous. Styles somewhat spreading. Capsule obtusely triangular: placentæ somewhat prominent. Seeds ovate, longitudinally and transversely striate.—We have adopted Michaux's name for this species, it being wholly uncertain whether A. hypericoides, *Linn.* should be referred to this or the preceding species.

4. *A. amplexicaule* (Michx.): stem nearly terete below, erect, dichotomously branched above, the branches somewhat ancipital; leaves broadly ovate-cordate, clasping; flowers erect; exterior sepals nearly orbicular; inner ones linear-lanceolate, rather shorter; styles 3, distinct; capsule oblong.—*Michx. fl.* 2. 77; *Pursh, fl.* 2. *p.* 374; *Ell. sk.* 2. *p.* 23. A. stans, *Willd. sp.* 3. *p.* 1473. Hypericum tetrapetalum, *Lam. dict.* 4. *p.* 146.

Near St. Mary's, Georgia, *Elliott, Dr. Bacon! Mrs. Miller!* Florida, *Michaux!*—Stem 1–2 feet high, more branching above than the preceding species. Leaves ¾ of an inch long, more than half an inch broad at the base. Flowers when expanded more than an inch in diameter. Petals one-third longer than the calyx. Stamens very numerous. Styles a little spreading. Capsule half the length of the calyx, attenuated at the summit: placentæ linear, at length separating from the valves. Seeds cylindrical-oblong, longitudinally and transversely striate.—Easily distinguished from A. stans by its broad clasping leaves.

5. *A. microsepalum:* stem nearly terete, much branched; leaves (very small) oblong-linear, crowded; flowers erect, on long peduncles; sepals much shorter than the obovate unequal petals; styles 3, long, distinct.

Georgia, *Croom!* Middle Florida, *Dr. Alexander!* March and April.—Stem erect?, a foot or more high, paniculately branched. Leaves 4–5 lines long and a line wide, a little narrowed below. Flowers large and rather showy, clustered at the summit of the branches; the peduncles about half an inch long. Sepals nearly equal in length; the exterior one about a third broader than the others. Petals more than twice as long as the sepals, one of them usually much shorter than the others. Styles filiform, longer than the ovary.—This species differs from all the others of the genus in the somewhat equal and very small sepals, as well as in the long style: it has the habit of Hypericum.

2. HYPERICUM. *Linn.; Lam. ill. t.* 643; *Chois. l. c.* (in part.)

Hypericum & Sarothra *of Authors.*

Sepals 5, more or less connected at the base, usually somewhat equal, foliaceous. Petals 5, oblique and often inequilateral. Stamens very numerous, or sometimes few, united at the base into 3–5 parcels, or occasionally distinct.

Glands between the parcels of filaments none. Styles 3–5, distinct or more or less united, persistent. Capsule usually membranaceous, 1-celled with 3–5 parietal placentæ, or 3–5-celled by the placentæ meeting in the axis.—Herbaceous or shrubby plants. Flowers yellow, solitary or cymose at the summit of the stem and branches.

§ 1. *Stamens very numerous, polyadelphous: capsule 5- (rarely 6–7-) celled; the dilated placentæ retroflexed into the middle of the cells. Perennial herbs: leaves ample: flowers very large.*

1. *H. pyramidatum* (Ait.): stem quadrangular and usually branching above; leaves ovate-lanceolate or oblong-lanceolate, partly clasping, membranaceous, minutely pellucid-punctate; sepals ovate or oblong, acute, scarcely one-third the length of the petals; styles as long as the stamens, connate below, at length distinct.—*Ait. Kew.* (*ed.* 1.) 3. *p.* 103; *Willd. sp.* 3. *p.* 1444; *Vent. Malmais. t.* 118; *DC. prodr.* 1. *p.* 545. H. amplexicaule, *Lam. dict.* 4. *p.* 141. H. macrocarpon, *Michx. fl.* 2. *p.* 82. H. ascyroides, *Willd. l. c.; Pursh, fl.* 2. *p.* 374; *Bigel. fl. Bost. p.* 279; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 109.

Banks of rivers, Canada! to Pennsylvania! west to Ohio. July.—Stem 2–5 feet high, nearly terete below: branches erect, 4-angled; two of the angles often much strongest. Leaves 2–5 inches long, acutish or sometimes obtuse. Flowers 1½ inch in diameter, few or solitary at the ends of the branches, usually several in a leafy cyme at the summit of the stem; the central flowers on short pedicels; the lateral peduncles often elongated and 1-flowered. Petals obliquely and rather narrowly obovate, sometimes 6. Styles occasionally 6 or 7, recurved at the extremity: stigmas capitate. Capsule ovoid-conical, an inch long. Seeds terete, slender, with a slightly winged raphe.—We are confident that there is but a single North American species of this section, upon which the H. pyramidatum of Aiton must have been founded: we therefore adopt the oldest name. We have not seen the figure of Ventenat: the character "stylis brevibus crassis," *Choisy, in DC.* is not applicable to our plant.

§ 2. *Stamens very numerous, more or less polyadelphous: capsule 3–5-celled by the meeting of the placentæ in the axis: placentæ either distinct or more or less cohering with each other, seminiferous posteriorly (next the valves.) Perennial herbs or under-shrubs.*

* *Shrubby: capsule pentacarpellary.*

2. *H. Kalmianum* (Linn.): very much corymbosely branched; branches quadrangular with 2 of the angles slightly winged; leaves crowded, linear-sublanceolate; obtuse, a little narrowed toward the base; cymes fastigiate, 3–7-flowered; sepals ovate-lanceolate, rather obtuse, about half the length of the petals; styles connate at the base.—*Willd. sp.* 3. *p.* 1438; *Pursh, fl.* 2. *p.* 374; *Hook. fl. Bor.-Am.* 1. *p.* 109.

Banks of rivers, Canada and around the Great Lakes; Falls of Niagara, *Cooper!* &c. Fort Gratiot, *Dr. Pitcher!* (Virginia, *Kalm* ex *Linn.;* but Kalm's specimens we suspect were collected in Canada.) August.—A shrub 1½ feet high. Leaves an inch long, 2–3 lines wide, slightly glaucous, with revolute margins. Petals obovate, very oblique. Styles hardly longer than the ovary, very slender. Capsule ovate.—Apparently an exclusively northern species.

* * *Shrubby or suffruticose: capsule tricarpellary.*

3. *H. prolificum* (Linn.): stem sparingly branched, the branches ancipital; leaves oblong-lanceolate, rather obtuse, narrowed at the base; cymes compound, leafy; sepals foliaceous, unequal, ovate, with a short abrupt point, one-third shorter than the obovate petals; styles at first united, at length distinct; capsule ovate-oblong.—*Willd. sp.* 3. *p.* 1453; *Ell. sk.* 2. *p.* 30; *DC. prodr.* 1. *p.* 547. H. densiflorum, *Pursh, fl.* 2. *p.* 376.

β. cymes few-flowered, terminal and axillary; axils of the leaves mostly naked; capsule ovate-conical, large.

γ.? stem much branched; leaves much smaller and crowded, linear-oblong, fascicled in the axils; cymes compound; flowers much smaller; sepals ovate-lanceolate; capsule oblong, attenuate at the summit.—H. galioides, *Pursh! fl.* 2. *p.* 376. (excl. syn.)

Banks of rivers and swamps, New-Jersey! to Florida! β. Ohio, *Riddell!* γ. New-Jersey! Texas, *Dr. Veatch!* July–Aug.—Shrub 2–3 feet high. Leaves 2–2½ inches long, 4–6 lines wide (in γ. 1–1½ inch long; the upper ones often scarcely a line wide; revolute on the margin). Flowers as large as in H. perforatum (except in γ.). Petals very oblique. Capsule in β. more than half an inch long, nearly 3 times as large as in γ. Torus conspicuous. Seeds cylindrical, slightly curved.

4. *H. adpressum* (Barton): stem 2-winged above; leaves linear-lanceolate or linear-oblong, closely sessile, pellucid-punctate (without black dots), veined, with smaller ones fascicled in the axils; cyme few-flowered, naked; sepals very unequal, oblong and obovate, rather obtuse, at length reflexed; petals twice as long as the sepals, oblong-obovate; styles united to the summit; capsule ovate-oblong.—*Bart.! fl. Philad.* 2. *p.* 15. H. Bonaparteæ, *Bart.! fl. Am. Sept.* 3. *t.*

Borders of swamps in the pine barrens of New-Jersey! Banks of the Schuylkill near Philadelphia, *Barton! Conrad!* Arkansas, *Nuttall!* Aug.–Sept.—Stem about 2 feet high, somewhat shrubby at the base. Leaves 2 inches long, 3–4 lines wide, narrowed at the summit, and often also at the base, the upper ones sometimes rather acute; veins numerous, and appearing translucent when the leaf is held to the light. Cymes compound, 15–20-flowered. Flowers half as large as in H. perforatum; the dichotomal ones sessile. Stamens very numerous. Styles longer than the stamens, united until the fruit is nearly mature. Capsule rarely 4-celled. Torus hemispherical, very distinct. Seeds cylindrical.

5. *H. rosmarinifolium* (Lam.): stem suffrutescent, terete below, somewhat ancipital above, straight; branches few and erect; leaves linear, rather obtuse, narrowed at the base, revolute on the margin; cymes few-flowered, dense, terminal; sepals nearly equal, oblong, acute at each end; petals obovate, rounded at the summit, with an obscure lateral tooth; style slightly united; capsule broadly ovate; seeds cylindrical.—*Lam. dict.* 4. *p.* 159; *Willd. sp.* 3. *p.* 1450, not of *DC. prodr.*, nor of *Ell.*

Near Lexington, Kentucky, *Short!* Tennessee, *Cooper!* July–Aug.—Stem about 2 feet high. Leaves 1½–2 inches long, 2 lines wide, rather distant, with a few smaller ones in the axils. Flowers about half an inch in diameter. Capsule scarcely 2 lines long.—The plant here described may not be the original H. rosmarinifolium of Lamarck, whose descriptive character is wholly insufficient.

6. *H. galioides* (Lam.): stem frutescent, terete; branches few and straight, erect; leaves linear-lanceolate, fascicled in the axils as if verticillate, rather obtuse, narrowed into a petiole at the base, dotted with large pellucid glands; cymules numerous, axillary and terminal on the paniculate branches; sepals nearly equal, linear-lanceolate, at length reflexed; petals

broadly obovate with an angular tooth near the summit; filaments scarcely polyadelphous; styles slightly cohering; capsules 3-lobed, oblong-conical, with a long tapering point; placentæ scarcely extending to the axis.—*Lam. dict.* 4. *p.* 154; *Willd. sp.* 3. *p.* 1451; *DC. prodr.* 1. *p.* 550. H. fasciculatum, *Willd. l. c.* (excl. syn.) H. rosmarinifolium, *Ell. sk.* 2. *p.* 20.

Damp soils, S. Carolina and Georgia, *Elliott;* Middle Florida, *Dr. Chapman!* Red River, Louisiana, *Dr. Hale!* June–Aug.—Stem 2–3 feet high, slender; the bark smooth and brownish. Leaves about an inch long and 1¼ wide; those in the axils nearly as long as the primary ones. Flowers half as large as in H. perforatum. Torus hemispherical, very distinct.

7. *H. fasciculatum* (Lam.): stem shrubby, much branched, the branches somewhat ancipital; leaves linear and very narrow, crowded, coriaceous, closely sessile, revolute, fascicled in the axils as if verticillate, with large pellucid glands; flowers in terminal leafy cymules, or solitary and axillary; sepals rather unequal, linear; petals broadly obovate, with an acute angular tooth near the summit; filaments slightly polyadelphous; styles somewhat cohering; capsule oblong-conical, with a long tapering point.—*Lam. dict.* 4. *p.* 160; *Michx. fl.* 2. *p.* 80*?; Ell. sk.* 2. *p.* 28; *DC. prodr.* 1. *p.* 554. H. aspalathoides, *Willd. sp.* 3. *p.* 1451; *Pursh, fl.* 2. *p.* 376. H. tenuifolium, *Pursh, l. c.* H. Coris? *Walt. Car. p.* 190. H. Michauxii, *Poir. dict.* 7. *p.* 696?

β. stem somewhat diffuse; leaves very short, in numerous approximated whorls; flowers solitary and in threes towards the summit of the branches; sepals oblong, obtuse, scarcely one-third the length of the petals.—H. axillare, *Lam. dict.* 4. *p.* 160?

Wet pine barrens, Georgia! to Florida! Louisiana, *Drummond. β.* N. Carolina, *Curtis! Kin!* (in herb. *Muhl.*) July–Sept.—Shrubs 1–2 feet high. Leaves 6–8 lines long (2–3 in *β.*). Flowers as in the preceding species. Sepals resembling the leaves. Petals in *β.* with scarcely any lateral tooth. Seeds oblong.

* * * *Herbaceous: capsule tricarpellary.* (*Petals and anthers with black dots.*)

8. *H. perforatum* (Linn.): stem ancipital, corymbosely branched; leaves ovate-elliptical, obtuse, with pellucid dots; petals twice as long as the lanceolate acute sepals; styles diverging.—*Willd. sp.* 3. *p.* 1453; *Eng. bot. t.* 295; *Pursh, fl.* 2. *p.* 377; *Bigel. fl. Bost. p.* 279; *DC. prodr.* 1. *p.* 549; *Hook. fl. Bor.-Am.* 1. *p.* 110.

Old fields, pastures, &c. throughout Canada and the United States: introduced. July–Aug.—Stem 1–2 feet high. Leaves closely sessile, 6–10 lines long, with very conspicuous dots. Flowers numerous. Stamens mostly in 3 sets.—*St. John's-wort.*

9. *H. Scouleri* (Hook.): stem terete below, quadrangular above; leaves oblong-ovate, closely sessile and somewhat clasping; not dotted; under surface with numerous prominent veins; cyme somewhat compound; sepals broadly ovate, rather obtuse, one-third the length of the petals, dotted with black; styles 3, distinct, erect.—*Hook.! fl. Bor.-Am.* 1. *p.* 111.

β. leaves pellucid-punctate; sepals somewhat acute.

Dry gravelly soils and limestone rocks, Oregon, *Dr. Scouler! Douglas. β.* Rocky Mountains, *Nuttall!*—About 18 inches high, sparingly branched. Leaves ¾ of an inch long, very obtuse. Flowers one-third smaller than in H. perforatum. Petals sprinkled with a few black dots near the margin.

10. *H. corymbosum* (Muhl.): every part of the plant marked with black dots; stems terete, corymbosely branched above; leaves oblong or ovate, somewhat clasping; cymes many-flowered, corymbed; sepals ovate, acute; petals oblong; styles distinct, about as long as the ovary.—*Muhl.! in Willd.*

sp. 3. *p.* 1457, *& cat. p.* 71; *Pursh, fl.* 2. *p.* 377; *Bigel. fl. Bost. p.* 280. H. punctatum, *Beck, bot. p.* 61; *Darlingt. fl. Cest. p.* 322. H. micranthum, *Hook. fl. Bor.-Am.* 1. *p.* 109. H. Virginicum, *Walt. Car. p.* 189.

Open woods, meadows, &c. Canada! to Pennsylvania! west to Arkansas! July–Aug.—Stem 1½–2 feet high. Leaves 1–2 inches long, closely sessile, usually more or less clasping, rarely narrowed at the base, pellucid-punctate. Flowers small: sepals marked with linear pellucid punctures besides the black dots. Petals nearly 3 times as long as the sepals, usually thickly dotted with black. Stigmas capitate, orange-red.

11. *H. maculatum* (Walt.): every part of the plant marked with black dots; stem terete, glaucous, corymbosely branched above; cymes many-flowered, corymbed; leaves cordate-oblong, clasping; sepals lanceolate, acute; glandularly denticulate on the margin; styles distinct, nearly twice as long as the ovary.—*Walt. Car. p.* 189; *Michx. fl.* 2. *p.* 80; *Ell. sk.* 2. *p.* 27. H. punctatum, *Lam. dict.* 4. *p.* 164; *DC. prodr.* 1. *p.* 547. H. micranthum, *Chois. prodr. Hyp. p.* 44. *t.* 5, *& in DC. l. c.*

Pine barrens, South Carolina, *Walter, Elliott*; Georgia, *Le Conte!* Middle Florida, *Dr. Chapman!* July–Aug.—Stem 2–4 feet high, much branched above. Leaves 1–1½ inch long, sometimes rather acute. Flowers very numerous, as large as in the preceding species. Petals obovate-oblong. Styles dilated and divariate at the base: stigmas capitate. Capsule conical-ovate. Seeds roundish-ovate, minutely striate.—Nearly related to the preceding species, but probably distinct. The black dots in these species, are minute vesicles filled with an intensely purple coloring matter, which is soluble in water.

§ 3. *Stamens very numerous, more or less polyadelphous: capsule* 1-*celled, with* 3 (*rarely* 4) *parietal placentæ, which are often somewhat introflexed but do not reach the axis, seminiferous anteriorly* (*next the axis*). *Perennial herbs, or low shrubs.*

* *Shrubby or suffruticose.*

12. *H. aureum* (Bartram): widely branched above, the ultimate branches ancipital; leaves oblong, obtuse, attenuate at the base, glaucous beneath, minutely undulate-crisped on the margin, somewhat coriaceous; flowers large, nearly solitary and sessile; petals (orange-yellow) coriaceous, reflexed, longer than the ovate unequal sepals and the excessively numerous stamens; capsule (red) ovoid-conical, almost bony, acuminate with the connate styles.—*Bartr. trav. p.* 383. H. amœnum, *Pursh, fl.* 2. *p.* 375; *Nutt.! gen.* 2. *p.* 16; *Ell. sk.* 2. *p.* 31; *DC. prodr.* 1. *p.* 544. H. frondosum, *Michx. fl.* 2. *p.* 81? *Muhl.! cat. p.* 71.

On the Patse-Liga creek, a branch of Flint River, Georgia, *Bartram, Dr. Boykin! Baldwin!* In South Carolina and Georgia, *Lyon*, ex *Pursh*. June–Aug.—Shrub 2–4 feet high. Leaves 1½–2 inches long, half an inch or more wide, very minutely pellucid-punctate, obscurely veined. Flowers on very short pedicels, or ordinarily more properly sessile in the upper pair of bract-like leaves. Petals often nearly an inch in length, somewhat rhomboidal-ovate, often with a lateral tooth, persistent. Capsule small, not lobed.—A splendid, but very local species, not extending eastward beyond the Oakmulgee River, according to Elliott & Dr. Boykin. H. frondosum, *Michx.* which we doubtfully refer to this species, was found in Tennessee.

13. *H. myrtifolium* (Lam.): stem terete, simple or corymbosely branched above; leaves cordate-oblong, clasping, obtuse, coriaceous and almost veinless, somewhat glaucous; cymes fastigiate, compound, very leafy; dichotomal flowers nearly sessile; sepals ovate, at length reflexed, about the length

of the petals; stamens very numerous, nearly as long as the petals; capsule conic, coriaceous, 3-lobed, subulate with the connate at length distinct styles. —*Lam. dict.* 4. *p.* 180; *DC. prodr.* 1. *p.* 547. H. glaucum, *Michx. fl.* 2. *p.* 78; *Pursh, fl.* 2. *p.* 376; *Ell.! sk.* 2. *p.* 32; *DC. l. c.* H. rosmarinifolium, *Chois. in DC. l. c.?* not of *Lam.*

Florida, *Michaux, Mr. F. Cozzens! Dr. Chapman! Dr. Alexander!* Alabama, *Dr. Gates!* Georgia, *Le Conte!* and South Carolina, *Elliott!* May–June.—A straggling shrub, 1–2 feet high. Leaves very numerous, minutely punctate with brownish somewhat pellucid dots, about an inch long; those of the branches of the cyme much smaller; the floral ones shorter than the sepals: the midrib conspicuous. Sepals nearly equal, resembling the leaves. Petals very inequilateral. Styles occasionally 4. Capsule strongly lobed; the placentæ, though much introflexed, not reaching the axis. Seeds ovoid, smooth.

14. *H. dolabriforme* (Vent.): suffruticose; stem decumbent at the base, simple or branching above; leaves linear-lanceolate, veinless, spreading or at length reflexed; the margins revolute when old; cyme fastigiate, at first few-flowered, at length divaricate and somewhat compound, somewhat leafy; sepals unequal, ovate-lanceolate, acute, about the length of the dolabriform petals; capsule coriaceous, conoidal, tricarinate, acuminate; styles united, or at length distinct above; seeds strongly rugose transversely.—*Vent. hort. Cels. t.* 45; *Pursh, fl.* 2. *p.* 378; *DC. prodr.* 1. *p.* 547. H. procumbens, *Michx.! fl.* 2. *p.* 81; *Willd. sp.* 3. *p.* 1450; *Pursh, l. c.; DC. l. c.*

Dry hills, Kentucky, *Michaux, Rafinesque! Short!* July–Aug.—Stem straggling, 6–20 inches long, with a brownish exfoliating bark, slightly ancipital above. Leaves (slightly glaucous) 1–1½ inch long, closely sessile, obtuse or acutish, marked with large pellucid at length brownish dots, with smaller ones often fascicled in the axils or on short branches. Dichotomal flowers on very short peduncles. Sepals about the length of the mature capsule, strongly dotted; the broader ones often with 3 pellucid nerves at the base; the others lanceolate. Petals obovate-cuneiform, but very inequilateral or falcate. Valves of the capsule not in the least introflexed; but with a salient ridge opposite the thick and cord-like placentæ, giving the capsule, and particularly the ovary, a somewhat triquetrous appearance. Seeds oval, in several rows.

15. *H. ambiguum* (Ell.): branches numerous, compressed; leaves thin, linear-lanceolate, narrow at the base, acute, mucronate, with a callous whitish point; flowers solitary and three together in the axils of the upper leaves; sepals as long as the petals, unequal, linear-lanceolate, attenuated at the base; petals obliquely obovate, cuspidate on one side; styles slightly united.—*Ell. sk.* 2. *p.* 30. S.C.

Banks of rivers. Near Columbia, Georgia, *Elliott;* on the Apalachicola, *Dr. Chapman!* May–June. Shrub 2–4 feet high. Leaves 1½ inch long, 2–3 lines wide. Capsule (immature) oblong, attenuated at the summit, shorter than the foliaceous sepals.

16. *H. nudiflorum* (Michx.): stem branching and shrubby below; branches quadrangular and winged; leaves ovate-lanceolate or nearly oblong, obtuse, pale on both sides, a little veiny, very minutely punctate with reddish dots; cymes pedunculate, naked, loosely flowered; bracts setaceous; dichotomal flowers on short but distinct pedicels; sepals oblong-lanceolate or linear, about half the length of the obovate petals; capsule ovoid-conic, acuminate with the connate styles.—*Michx. fl.* 2. *p.* 78; *Willd. sp.* 3. *p.* 1456; *Pursh, fl.* 2. *p.* 375; *DC. prodr.* 1. *p.* 548 (excl. syn. *Ait.*); *Ell. sk.* 2. *p.* 32.

β. leaves (smaller) oblong, somewhat attenuate at the base and often very slightly petioled, minutely punctate with pellucid dots; flowers rather larger; sepals more than half the length of the petals.

FT. TOWSON,
OKLA.

Borders of ponds and swamps, Pennsylvania (*herb. Schweinitz!*) and N. Carolina! to Georgia! and Louisiana. β. Arkansas, *Dr. Leavenworth!* Aug.–Sept.—Stems much branched below, 1–2-feet high. Leaves 1–2½ inches long, usually obtuse at the base and closely sessile, occasionally very slightly petioled, membranaceous, the margins minutely undulate. Cyme rather few-flowered. Flowers small. Sepals obtuse or acutish, spreading, small. Styles (sometimes 4, *Ell.*) distinct at the summit.—The dots in the leaves of this species are reddish purple when viewed by transmitted light; but in the Arkansas variety (which complete specimens may show to be distinct) the dots are perfectly colorless.

17. *H. sphærocarpon* (Michx.): stem obscurely 4-sided, somewhat ancipital above; leaves linear-oblong, obtuse, with a minute callous tip, sparingly pellucid-punctate, almost veinless; cyme nearly naked, compound, pedunculate; the dichotomal flowers sessile; sepals nearly equal, ovate, acuminate, with a spinulose callous tip; petals three times as long the calyx; styles closely united; capsule globose.—*Michx. fl.* 2. *p.* 78; *DC. prodr.* 1. *p.* 548, not of *Nutt.*

Rocky banks of Kentucky River, *Short? Michaux.* July—Stem 1–2 feet high, shrubby at the base? (herbaceous, *Michaux*), branching from the middle upward. Leaves 1–2½ inches long, 2–5 lines wide, of nearly the same width throughout, closely sessile, without black dots. Cyme at length many times dichotomous, and rather crowded. Sepals somewhat colored in the middle and striate with parallel lines. Petals with a minute callous projection on one side below the summit. Ovary ovate, about one-third the length of the tapering united styles. Torus indistinct. Capsule exactly globose, coriaceous; the placentæ not inflexed. Seeds (immature) fewer than usual (about 20?), corrugated, with a distinct winged raphe.—A rare and very distinct species.

18. *H. opacum:* stems 2-winged; leaves linear-oblong, obtuse, closely sessile, somewhat coriaceous, opaque, punctate with minute brown dots, veinless; cyme compound, naked; the dichotomal flowers sessile; sepals very unequal, obovate and oblong; petals somewhat dolabriform, twice as long as the sepals; styles united to the summit; capsule globose-ovate, 3-lobed by the inflexion of the dorsal sutures.

Georgia, *Mrs. Miller! Dr. Loomis!* Alabama, *Dr. Gates!*—Shrub about 2 feet high, with slender branches, quadrangular, with 2 of the angles distinctly winged. Leaves somewhat shining, scarcely an inch long, with a few smaller ones fascicled in the axils. Flowers one-third as large as in H. perforatum. Capsule nearly twice as long as the calyx, obtusely 3-lobed, and with the placentæ also slightly introflexed. Seeds oblong, finely striate and wrinkled.

* * *Herbaceous.*

19. *H. pilosum* (Walt.): scabrous-tomentose; stem simple, virgate, terete; leaves ovate-lanceolate, usually appressed, closely sessile and somewhat clasping; cymes few-flowered; sepals ovate-lanceolate, unequal, acute, much shorter than the petals; styles (often 4) distinct, as long as the ovary; capsule ovate.—*Walt. Car. p.* 190; *Nutt.! gen.* 2. *p.* 25; *DC. prodr.* 1. *p.* 549. H. simplex, *Michx. fl.* 2. *p.* 80; *Pursh, fl.* 2. *p.* 370; *Nutt.! l. c.*; *Ell. sk.* 2. *p.* 26; *DC. l. c.* H. Virginianum, &c. *Pluk. alm. t.* 245. *f.* 6, & *amalth. t.* 421. *f.* 3. Ascyrum villosum, *Linn.*; *Willd. sp.* 3. *p.* 1474.

Wet pine barrens, South Carolina! to Florida! west to Louisiana! June–Sept.—① Hairs of the pubescence moniliform. Stem 1½–2½ feet high, perfectly simple except at the summit, which is somewhat corymbosely branched. Leaves about half an inch long, sometimes a little alternate at the base, very rarely spreading. Flowers 5–6 lines in diameter. Petals obovate, involute when old. Stamens distinctly polyadelphous. Capsule as long as the sepals: placentæ a little introflexed. Seeds oval, finely striate longitudinally.

20. *H. angulosum* (Michx.): stem acutely quadrangular, simple below, corymbosely branched above; leaves oblong-lanceolate or subovate, acute, closely sessile and somewhat clasping, nearly opaque, very obscurely dotted; cymes compound, naked, the ultimate branches bearing alternate distant flowers; sepals unequal, ovate, acute; petals 3 times as long as the sepals, obovate, with an angular tooth near the summit; styles distinct, nearly 3 times as long as the ovary; capsule ovate.—*Michx. fl.* 2. *p.* 78; *Pursh, fl.* 2. *p.* 387; *Ell. sk.* 2. *p.* 25; *DC. prodr.* 1. *p.* 546. H. denticulatum, *Walt. Car. p.* 190.

Wet places in pine barrens, New Jersey! to Florida! June–Aug.—Stem 1½–2 feet high, simple the greater part of its length, often corymbosely branched above. Leaves 8–12 lines long, rather thick, usually erect, indistinctly veined, shorter than the internodes; the upper ones sometimes linear. Cymes often decompound, (occasionally reduced almost to a solitary flower); the divisions appearing racemose from the abortion of one of the forks at each subdivision of the cyme. Petals about half an inch long, copper-colored. Capsule shorter than the calyx: placentæ somewhat introflexed. Seeds oval, smooth.—We have not restored Walter's name to this species, where it most probably belongs, as there is a H. denticulatum of Kunth which has been long established.

21. *H. ellipticum* (Hook.): stem quadrangular, simple below, somewhat branched at the summit; leaves elliptical, very obtuse, closely sessile, pellucid-punctate; cyme nearly naked; sepals oblong, very unequal, spreading; styles 3, connate nearly to the summit; capsule ovate-globose.—*Hook. fl. Bor.-Am.* 1. *p.* 110. H. sphærocarpon, *Bart.! fl. Philad.* 2. *p.* 14; *Nutt.! gen.* 2. *p.* 16, not of *Michx.*

Moist grounds along rivers, Canada! Northern and Western parts of New-York! Banks of the Connecticut! New Jersey, *Mr. Collins!* Pennsylvania near Philadelphia, *Barton!* July.—Stem 10–20 inches high. Leaves an inch long, marked with obscure brownish dots, somewhat clasping or a little narrowed at the base. Cyme usually few-flowered. Flowers pale orange. Petals obovate, one-third longer than the sepals. Styles as long as the ovary, separating when old: stigmas minute, subcapitate. Capsule shorter than the calyx; the placentæ somewhat introflexed. Seeds oval, minutely striate and rugulose.

§ 4. *Stamens* 5–20, *distinct: capsule* 1-*celled, with* 3 *strictly parietal placentæ: styles* 3, *distinct, short. Annual.*

* *Stem simple below, dichotomously cymose above, with a dichotomal (terminal) flower in each division.*

22. *H. mutilum* (Linn.): stem quadrangular, usually much branched; leaves ovate-oblong, obtuse, clasping, 5-nerved, pellucid-punctate; cymes leafy; sepals lanceolate, rather longer than the oblong petals; stamens 6–12; capsule ovate-conical.—*Linn. syst.* 2. *p.* 511. H. quinquenervium, *Walt. Car. p.* 190; *Michx. fl.* 2. *p.* 79; *DC. prodr.* 1. *p.* 550; *Hook. fl. Bor.-Am.* 1. *p.* 110; *Darlingt. fl. Cest. p.* 323. H. parviflorum, *Muhl.! in Willd. sp.* 3. *p.* 1457; *Pursh, fl.* 2. *p.* 376; *Ell. sk.* 2. *p.* 24. H. stellarioides, *H. B. & K. nov. gen. & sp.* 5. *p.* 196 (ex *Choisy*).

Low grounds, Canada! to Florida! and west to Arkansas! Texas, *Drummond!* July–Sept.—Stem 6–12 inches high, slender, sometimes nearly or quite simple. Leaves about ¾ of an inch long, thin; lateral veins obscure. Flowers very small; those in the forks of the cyme pedicellate. Styles somewhat spreading: stigmas capitate. Capsule a little longer than the calyx. Seeds cylindrical-oblong.—In specimens from Maryland and Arkansas, the stem is nearly simple, the leaves more remote, and the cyme few-flowered; but they appear to be mere variations from the ordinary form of the plant.

23. *H. Canadense* (Linn.): stem quadrangular, with erect branches; leaves linear or linear-lanceolate, narrowed at the base, pellucid-punctate and with black dots beneath; sepals lanceolate, very acute, longer than the petals and shorter than the oblong-conical capsule; stamens 5–10.—*Willd. sp.* 3. *p.* 1455; *Michx. fl.* 2. *p.* 79; *Pursh, fl.* 2. *p.* 378; *Ell. sk.* 2. *p.* 24; *DC. prodr.* 1. *p.* 550; *Hook. fl. Bor.-Am.* 1. *p.* 110; *Darlingt. fl. Cest. p.* 324.

Wet places, particularly in sandy soils, Canada! and Newfoundland, to Georgia! June–Aug.—Stem 6–12 inches high, slender. Leaves usually about an inch long and 1–2 lines wide; sometimes nearly lanceolate, obscurely 3-nerved. Sepals unequal. Petals oblong, orange. Styles shorter than the ovary, (rarely 4 or 5) somewhat clavate: stigmas capitate. Capsule very acute, usually about twice as long as the sepals. Seeds cylindrical, yellow.

* * *Stems rather rigid, dichotomously or irregularly much branched from near the base: flowers distant and somewhat racemose on the branches: leaves subulate or narrowly linear, appressed.* (Sarothra, *Linn.*)

24. *H. Sarothra* (Michx.): stem and branches filiform, quadrangular; leaves very minute, subulate, carinate; flowers sessile; stamens 5–10; capsule conical, elongated, twice the length of the linear-lanceolate sepals.—*Michx. fl.* 2. *p.* 79; *Pursh, fl.* 2. *p.* 78; *Darlingt. fl. Cest. p.* 324. H. nudicaule, *Walt. Car. p.* 190. Sarothra gentianoides, *Linn.; Willd. sp.* 1. *p.* 1515; *Ell. sk.* 1. *p.* 371; *Grev. & Hook. in bot. misc.* 3. *p.* 236. S. hypericoides, *Nutt.! gen.* 2. *p.* 204; *Bart. fl. Am. Sept.* 3. *t.* 92. *f.* 1.

Sandy fields and road sides, Canada! to Florida! and west to the Mississippi! June–Aug.—Stem 4–10 inches high, appearing naked from the very minute appressed leaves; branches slender and wiry, at first diverging, at length nearly erect. Leaves 1–2 lines long, resembling stipules. Flowers very minute. Petals oblong-linear, longer than the calyx. Styles spreading: stigmas capitate. Capsule dark purple, very acute. Seeds extremely minute oblong, yellowish; inner integument thick and slightly fleshy.—This plant is without doubt a genuine Hypericum, although it is excluded from the genus and from the order Hypericaceæ by most botanists. The inner integument is mostly thicker than usual, in this and the following species, so that it has been mistaken by Gærtner and others for albumen.

25. *H. Drummondii:* stem and branches rather stout, terete below, quadrangular above; leaves narrowly linear, longer than the internodes; flowers pedicellate; stamens 10-20; capsule ovate, shorter than the lanceolate sepals.—Sarothra Drummondii, *Grev. & Hook. l. c. t.* 107.

Near St. Louis, Missouri, and near New Orleans, *Drummond! Dr. Ingalls!* Arkansas, *Dr. Pitcher! Dr. Leavenworth!* Milledgeville, Georgia, *Dr. Boykin!* July–Sept.—Stem 10–18 inches high: the branches almost always alternate. Leaves 6–8 lines long, acute, marked with opaque dots. Flowers 3 times as large as in the preceding species: pedicels 2–4 lines long. Sepals unequal, shorter than the oblong petals. Capsule 2½ lines long. Seed 30–40, oval, about 10-ribbed, and transversely lacunose, 5 or 6 times as large as in H. Sarothra.

‡ *Species which have not fallen under our observation.*

* *Shrubby.*

26. *H. elatum* (Ait.): trigynous; sepals lanceolate-ovate, acute; stamens longer than the corolla; stem shrubby; leaves ovate-oblong. *Ait. Kew.* (*ed.* 1.) 3. *p.* 104.

The H. elatum figured by Jussieu (in *ann. mus.* 3. *t.* 17.), is probably different from Aiton's plant, and is doubtless not a native of North America.

27. *H. fastigiatum* (Ell.): branches somewhat compressed; leaves narrowly lanceolate, very acute; corymbs terminal, many-flowered, fastigiate; styles united. *Ell. sk.* 2. *p.* 31, not of *H. B. & K.*

Pine barrens of Scriven county, Georgia. May–July.—Shrub 3 feet high. Leaves about 3 inches long, tapering yet connate at the base. Corymbs with solitary flowers nearly sessile in the lower divisions. Styles not separating as the pod matures. *Elliott.*—We have no specimens which agree with this description.

* * *Herbaceous.*

28. *H. lævigatum* (Ait.): trigynous; leaves ovate, somewhat clasping; sepals ovate, acute; panicle trichotomous, the intermediate flower sessile. *Ait. Kew.* (*ed.* 1.) 3. *p.* 106.

Referred by Willdenow and most succeeding authors to H. nudiflorum; but the dichotomal flowers in that species are not sessile. Perhaps H. angulosum, or H. ellipticum.

29. *H. sessiliflorum* (Spreng.): trigynous; branches terete; leaves half-clasping, cordate-oblong, veinless, punctate; corymb terminal, with the flowers nearly sessile; sepals oblong, acute, foliaceous, much longer than the corolla; styles united. *Spreng. syst.* 3. *p.* 346.

Described from a specimen in Willdenow's herbarium. Probably H. myrtifolium.

30. *H. virgatum* (Lam.): stem straight, 4-angled; leaves ovate-lanceolate, slightly clasping, punctate with black dots, revolute on the margins; panicle dichotomous, few-flowered; sepals lanceolate; styles 2–3; stigmas capitate. *DC.—Lam. dict.* 4. *p.* 158; *DC. prodr.* 1. *p.* 547.

31. *H. cistifolium* (Lam.): stem angular; leaves ovate-oblong, rather acute, somewhat clasping, punctate with black dots beneath, revolute on the margins; flowers in dichotomous corymbs; sepals ovate; styles united. *DC. l. c.—Lam. dict.* 4. *p.* 158.

32. *H. hedyotifolium* (Poir.): stem straight, 4-angled; leaves sessile, decussate, lanceolate, rather acute, appressed, not pellucid-punctate, but with black dots beneath; sepals linear-lanceolate, with black dots; styles 3–4; stigmas capitate. *DC. l. c.—Poir. dict.* 7. *p.* 700.

Doubtless H. angulosum.

33. *H. triplinerve* (Vent.): stem herbaceous, 3-angled, decumbent at the base; leaves linear, much spreading, obtuse, with revolute margins; sepals ovate, acute; petals unequal. *DC.—Vent. hort. Cels. t.* 58; *DC. prodr.* 1. *p.* 552.

On the banks of the Ohio, *Michaux*, ex *Vent.*—We have not seen the figure and original description of this species; but the character given by Pursh, which is apparently taken from Ventenat, includes several important particulars not mentioned by Choisy; whose elaboration of the species of Hypericum in De Candolle's Prodromus is far from satisfactory. The stem is said by Pursh to be erect, the leaves triplinerved, the flowers as large as in H. perforatum, and the sepals and petals glandulose-serrate.

34. *H. anagalloides* (Cham. & Schlecht.): stem herbaceous, procumbent and creeping; leaves ovate, obtuse, 5–7-nerved, very minutely pellucid-punctate; cyme terminal, leafy, few-flowered, not glandulose; sepals obovate, shorter than the corolla; capsule . . . . .; stamens 15–20, distinct; styles 3, distinct. *Cham. & Schlecht. in Linnæa*, 3. *p.* 127.

St. Francisco, California.—Leaves membranaceous, 5–7-nerved; the largest about 6 lines long; the lower ones much smaller. Dichotomal flowers peduncled. *Cham. & Schlecht.*—Allied to H. humifusum, according to the authors cited; and apparently also to H. mutilum.

35. *H. acutifolium* (Ell.): stem herbaceous?, branching, glabrous; leaves narrowly lanceolate, acute; panicle many-flowered; capsules scarcely longer than the calyx. *Ell. sk.* 2. *p.* 26.

Milledgeville, Georgia, *Dr. Boykin.*—Resembles most the H. Canadense, but larger in every respect: it differs also in its acute leaves, proportionally short capsule, and much more compact panicle. *Elliott.*

H. rostratum, Raf. fl. Ludov.

H. fulgidum, Raf. fl. Ludov.

see Payer, Organog. p. 3,

3. ELODEA. *Adans.*; *Nutt. gen.* 2. *p.* 17; *Spach, in ann. sci. nat.* (*ser.* 2.) 5. *p.* 165, not of *Michx.*

Triadenium, *Raf.* Species of Hypericum, *Linn. &c.*

Sepals 5, equal, somewhat united at the base. Petals 5, deciduous, equilateral. Stamens 9 (rarely 12–15), triadelphous; the parcels alternating with 3 hypogynous glands. Styles 3, distinct. Capsule oblong, membranaceous, 3-celled: the placentæ somewhat cohering in the axis, at length separating from the valves.—Perennial glabrous or slightly glaucous herbs. Leaves membranaceous, pellucid-punctate, and often with a few black dots (the axils never leafy). Cymules few-flowered, terminal and in the axils of the upper leaves, pedunculate or subsessile: flowers dull orange-purple.

Spach has very well characterized this genus; but we have been obliged to reduce his seven species to two.

1. *E. Virginica* (Nutt.): leaves sessile, clasping; stamens united below the middle.—*Nutt.! gen.* 2. *p.* 17; *Ell. sk.* 2. *p.* 33; *Spach, l. c.* E. campanulata, *Pursh, fl.* 2. *p.* 379. E. Drummondii & Fraseri, *Spach, l. c.* Hypericum Virginicum, *Linn.; Michx. fl.* 2. *p.* 81; *Andr. bot. rep. t.* 552; *DC. prodr.* 1. *p.* 546; *Bigel. fl. Bost. p.* 281; *Darlingt. fl. Cest. p.* 322. H. campanulatum, *Walt. Car. p.* 191.

Swamps, Canada to Florida! and Louisiana! July–Aug.—Plant 1–2 feet high, often of a purplish hue. Stem nearly terete, branching. Leaves oblong, 1–2 inches or a little more in length, somewhat glaucous underneath. Axillary cymes mostly about 3-flowered; the terminal one often compound. Petals obovate-oblong, nearly twice the length of the calyx, marked with reddish veins. Stamens rarely 12 or more, always triadelphous; the filaments seldom united more than one-third of their length, shorter than the petals. Glands ovate, orange, secreting a copious sweetish fluid. Capsule obscurely triangular, nearly twice the length of the calyx when mature, rather acute. Seeds oblong, very numerous.

2. *E. petiolata* (Pursh): leaves attenuated into a petiole; filaments united above the middle.—*Pursh! fl.* 2. *p.* 379; *Nutt. l. c.; Ell. l. c.* E. tubulosa, axillaris, pauciflora, & floribunda! *Spach, l. c.* Hypericum petiolatum, *Walt. Car. p.* 191. H. axillare, *Michx. fl.* 2. *p.* 81. H. paludosum, *Chois. prodr. Hyper. & in DC. l. c.*

Swamps, New-Jersey! to Florida! west to Kentucky! and Arkansas! Aug.–Sept.—Plant about 2 feet high. Leaves oblong, narrowed at the base, 1½–3 inches long, with a short but usually distinct petiole. Cymules mostly axillary and 3-flowered, on short peduncles or nearly sessile. Flowers rather smaller than in E. Virginica, and of the same color. Sepals obtuse, scarcely one-third the length of the mature capsule. Seeds cylindrical-oblong.

‡ *Doubtful species.*

3. *E. tubulosa* (Pursh): leaves sessile; corolla tubular [?]; filaments united above the middle. *Walt.*—*Pursh, fl.* 2. *p.* 379. Hypericum tubulosum, *Walt. Car. p.* 191.

South Carolina, *Walter.*—This species has never been identified by any of our botanists. There is doubtless some mistake about the tubular corolla.

Order GUTTIFERÆ.—The figure of Clusia rosea in *Catesby, Car. t.* 99, was most probably taken from a West Indian specimen; it has not been found in Carolina. We have received, however, the leaves of a species of Clusia (probably C. rosea) from the extreme southern part of Florida.

Order XXII. FRANKENIACEÆ. *A. St. Hil.*

Sepals 5, united in a furrowed tube, persistent, equal. Petals alternate with the sepals, hypogynous, unguiculate, with appendages at the base of the limb. Stamens hypogynous, either equal in number to the petals and alternate with them, or having a tendency to double the number: anthers roundish, versatile. [Ovary 1-celled with 2–3 parietal placentæ: styles 2–3, filiform, united for a considerable part of their length.] Capsule 1-celled, enclosed in the calyx, 2–3- or 4-valved, many-seeded. Seeds attached to the margins of the valves, very minute [anatropous]. Embryo straight, erect in the midst of albumen.—Herbaceous plants or under-shrubs. Stems very much branched. Leaves opposite, exstipulate, with a membranous sheathing base, often revolute at the edge. Flowers sessile in the divisions of the branches, and terminal, embosomed in leaves, usually pink. *Lindl.*

1. FRANKENIA. *Linn.; DC. prodr.* 1. *p.* 349.

Styles 3, united below, stigmatose along the inner surface. Capsule loculicidal, many-seeded.

1. *F. grandifolia* (Cham. & Schlecht.): leaves obovate-cuneiform, mucronulate, with revolute margins, rather coriaceous, very minutely hairy and

ciliate particularly at the base; stems prostrate; branches and calyx minutely hairy. *Cham. & Schlecht. in Linnæa*, 1. *p.* 35; *Rœm. & Schult. syst.* 7. *p.* 70; *Hook. & Arn. bot. Beechey*, *p.* 135. F. latifolia, *Presl, rel. Hænk.; Rœm. & Schult. l. c.* 7. *p.* 1621. Velezia latifolia, *Eschscholtz, in mem. acad. St. Petersb.* (5. *ser.*) 10. fide *Schlecht. in Linnæa*, 3. *p.* 149.

Sea-shore of California, *Chamisso, Eschscholtz, Nuttall!*—Stems woody at the base, a span high. Leaves half an inch long, connected at the base by a hairy stipular membrane. Stamens 6–7. Capsule 3-valved.

ORDER XXIII. ILLECEBRACEÆ. *R. Br.*

Paronychieæ and a part of Caryophyllaceæ, *A. St. Hil.; DC.*

Sepals 5, distinct or united at the base, persistent. Petals alternate with the sepals, sometimes manifest, often minute and resembling sterile filaments, frequently wanting. Stamens as many as the sepals and opposite them, or fewer, rarely twice as many, inserted with the petals into the edge of the perigynous (rarely hypogynous) disk that lines the base of the sepals: filaments subulate, usually short: anthers fixed by the middle, introrse. Ovary 1-celled by the obliteration of the dissepiments, sometimes imperfectly 2–5-celled: styles 2–5, either distinct or partially (sometimes almost wholly) combined, stigmatose along the inner surface. Fruit an utricle, with a solitary seed borne on a slender funiculus rising from the base of the cell, or a 2–5-valved 1-celled many-seeded capsule, with the placenta in the axis. Seeds campulitropous. Embryo more or less curved around the outside of mealy albumen.—Herbaceous or rarely suffrutescent branching plants, with opposite or fascicled (rarely alternate) entire mostly sessile leaves, and scarious stipules. Flowers often minute, axillary or terminal, cymose or glomerate, or sometimes nearly solitary in the axils of the leaves: bracts usually similar to the stipules.

TRIBE I. ILLECEBREÆ. *DC.*

Sepals often cuspidate or awned, usually more or less cucullate or concave at the apex internally. Petals resembling sterile filaments, or none. Styles or stigmas 2, distinct or united. Utricle 1-seeded.—Leaves opposite, often crowded and fascicled.

1. PARONYCHIA. (*Tourn.*) *Juss. mem. mus.* 2. *p.* 388.

Sepals (oblong or linear) united at the base, cuspidate or awned at the apex; the inner portion membranaceous and colored, cucullate or concave at the summit. Petals none, or represented by 5 minute filaments or linear scales. Stamens 5, inserted into the edge of the disk that lines the base of the sepals within. Styles more or less united: stigmas 2. Utricle included in the connivent sepals.

§ 1. *Annual: sepals similar, dilated and fornicate at the apex within, produced posteriorly into a divaricate horn or awn: flowers cymose.* —(CHÆTONYCHIA, DC. ?)

1. *P. Drummondii:* minutely pubescent; stem erect, branching above into numerous cymes; leaves (of the branches) linear-oblong, short, the uppermost mucronate; calyx turbinate at the base, with a ring of hooked hairs; sepals broadly scarious and dilated above, the back produced into a short somewhat recurved horn; sterile setæ very minute.

Texas, *Drummond!* (2nd Coll. no. 93)—Stem stout, 10 inches high. Leaves of the stem wanting in the specimen; of the branches rigid, hispidly canescent, ½ an inch long, attenuate at the base; the uppermost smaller and bract-like. Stipules ovate, with a slender acumination, shorter than the leaves. Ultimate bracts (bracts? and stipules of bracts) scarious, ciliate, shorter than the flower. Sepals reddish-brown, the scarious margins and horn white. Stamens much shorter than the sepals. Sterile setæ perhaps often wanting. Style very short.—This species manifestly belongs to the section Chætonychia, *DC.*

2. *P. setacea:* nearly glabrous: stem erect, branching into the many times dichotomous diffuse cyme; leaves subulate-setaceous, erect; bracts similar, cuspidate; sepals hairy at the base, minutely scarious on the margin, the apex arched within, the back produced into a slender diverging awn; sterile setæ as long as the filaments.

Texas, *Drummond!* (3rd Coll. no. 33.)—Slender, 3–5 inches high. Leaves about the length of the internodes. Stipules shorter, lanceolate, attenuate into a long point. Sepals (and also peduncles and leaves) brownish, oblong-linear: awn straight, whitish, somewhat shorter than the sepals. Styles the length of the utricle, distinct more than half-way down.

§ 2. *Perennial: sepals similar, cuspidate or awned, the apex somewhat cucullate or concave within, but not dilated: flowers in dichotomous cymes or axillary glomerules, or sometimes nearly solitary.*— EUNYCHIA, DC.

The species with the flowers enveloped by scarious bracts may perhaps form a separate section (Argyronychia): P. dichotoma (Plottzia, *Arn.*) cannot be distinguished as a genus.

3. *P. sessiliflora* (Nutt.): very densely cæspitose, much branched and crowded: leaves imbricated, linear-subulate; the lowermost erect, obtuse; the upper longer, recurved-spreading, acute or mucronate, rather longer than the 2-cleft stipules; flowers terminal, solitary, sessile; sepals arched at the apex within, with divergent setaceous awns rather shorter than the sepals; sterile setæ as long as the filaments.—*Nutt.! gen.* 1. *p.* 160; *DC. prodr.* 3. *p.* 372; *Hook.! fl. Bor.-Am.* 1 *p.* 226. *t.* 75.

Hills of the Missouri near Fort Mandan (*Nuttall*) to the Saskatchawan (lat. 53°), *Drummond!* June–Sept.—Root (caudex) ligneous, perpendicular. Branches very dense, 2 inches high. Sepals oblong-linear, obscurely 3-nerved. Style as long as the sepals, 2-cleft at the apex.

4. *P. Jamesii:* minutely scabrous-pubescent, cæspitose, much branched from the base; leaves linear-subulate, obtuse (the uppermost mucronate); cymes dichotomous, few-flowered, crowded, with a central subsessile flower in each division; sepals minutely hairy at the base, linear-oblong, obscurely 3-ribbed or even, with a very short cusp, arched at the summit within; sterile setæ as long as the filaments.—P. dichotoma? *Torr.! in ann. lyc. New-York*, 2. *p.* 290.

β. depressa: **dwarf, densely dichotomous; leaves and stipules imbricated on the short branches; flowers nearly immersed in the leaves.—P. depressa,** *Nutt.! mss.*

Rocky Mountains, lat. 41°, *Dr. James! Nuttall!* *β.* "On the barren plains of the Rocky Mountains (lat. 41°), and on the plains of the Oregon." *Nuttall!*—Stems 4–6 inches high. Leaves on the flowering branches about half an inch long, slightly 2-sulcate, about the length of the internodes. Stipules shorter than the leaves, ovate-lanceolate, acuminate, or setose; the point much shorter than in P. dichotoma; the flowers smaller, fewer, and more crowded; the cusp stouter and confluent with the arched inner portion. Calyx obpyramidal at the base. Style 2-cleft ½ of its length. The *β.* depressa has the branches crowded with leaves to the summit; the stipules are nearly the length of the leaves, and the flowers are scarcely cymose.

5. *P. dichotoma* (Nutt.): **glabrous, densely cæspitose and branching from the thick procumbent ligneous base; leaves subulate, mucronate; cymes many times dichotomous, without central flowers, diffuse, fastigiate; bracts similar to the leaves; sepals linear, 3-ribbed, cuspidate, slightly cucullate at the apex within; sterile setæ very short.**—*Nutt.! gen.* 1. *p.* 159; *DC. prodr.* 3. *p.* 372. Achyranthes dichotoma, *Linn. mant. p.* 51; *Willd. sp.* 1. *p.* 1196. Plottzia dichotoma, *Arn. in Lindl. nat. syst. ed.* 2. *p.* 441.

On rocks around Harper's Ferry, Virginia! N. Carolina, *Schweinitz!* Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!* July–Nov. —Flowering stems 6–12 inches high, nearly simple. Leaves an inch or more in length (those of the flowering stems larger than the internodes; of the barren stems imbricated), erect, 2-sulcate beneath, about ½ a line wide. Stipules lanceolate, piliferous; the adjacent ones more or less united. Sepals yellowish, the base lined with a whitish disk. Style filiform, nearly as long as the sepals, cleft usually about ¼ its length.—Separated from Paronychia by Arnott, who however did not observe the 2-cleft style and the minute sterile setæ, which indeed are not easily detected in dried specimens. P. Jamesii connects it with other species of the genus. Nuttall's synonym, "Illecebrum dichotomum, *Willd.*" is perhaps a mistake, as there is no such species in Willdenow's Species Plantarum.

6. *P. argyrocoma* (Nutt.): **cæspitose, decumbent, minutely pubescent; leaves linear, acute, veinless; cymes terminal, glomerate; flowers enveloped by the numerous scarious bracts; sepals hairy, setaceously cuspidate, the inner portion bearded above; style slender, 2-cleft at the summit, hairy at the base; sterile setæ very short** (*Nutt.*) **or none.**—*Nutt.! gen.* 1. *p.* 160; *DC. prodr.* 3. *p.* 372. Anychia argyrocoma, *Michx.! fl.* 1. *p.* 113; *Pursh, fl.* 1. *p.* 176; *Ell. sk.* 1. *p.* 308, excl. syn.

On rocks, mountains of Virginia (*Pursh*) N. Carolina! Georgia! and Tennessee!—Flowering stems ascending, 4–10 inches high. Leaves ½–¾ of an inch long, much crowded on the younger stems. Stipules lanceolate, acuminate, nearly as long as the leaves. Bracts like the stipules. Sepals linear, 1-nerved, with a whitish straight acumination.—The synonym and locality "Harper's Ferry, Virginia" in *Elliott, l. c.* belong to P. dichotoma.

7. *P. herniarioides* (Nutt.): **depressed, diffusely branched, scabrous-pubescent; leaves oval or oblong, ciliate, mucronate; flowers sessile in the axils of the leaves; sepals subulate, mucronate; sterile setæ very minute.**— *Nutt.! gen.* 1. *p.* 160. Anychia herniarioides, *Michx.! fl.* 1. *p.* 113; *Ell. sk.* 1. *p.* 308?

In dry sandy places, N. Carolina, *Michaux!* S. Carolina (*herb. Schweinitz!*), and Georgia, *Baldwin!*—A small depressed plant with somewhat the aspect of Euphorbia polygonifolia. Leaves sessile, often slightly falcate, 3–4 lines long, minutely hispid under a lens. Stipules shorter than the leaves. Flowers solitary or slightly clustered in the axils. Sepals not cucullate at the apex within; the very short cusp somewhat spreading.

§ 3. *Sepals unequal, cucullate at the apex within; the three exterior armed with a spiny divergent awn; the* 2 *interior smaller, unarmed or cuspidate.*—ACANTHONYCHIA, DC. (Pentacæna, *Bartl.*)

8. *P. ramosissima* (DC.): diffusely branched, prostrate; stems suffrutescent at the base, woolly; leaves subulate, pungent, crowded, at length recurved; stipules imbricated, shorter than the leaves; flowers axillary, sessile; sepals hairy, the two inner pungent; stigmas subsessile.—P? ramosissima, *DC. mem. Paronyc. p.* 12. *t.* 4, *& prodr.* 3. *p.* 372; *A. St. Hil. fl. Bras.* 2. *p.* 188.

On the coast of California and Oregon, *Nuttall!* also a native of S. America.—Low, densely branched and tufted; the branches in fruit densely squarrose by the pungent spreading leaves and the spines of the outer sepals. Stipules numerous, imbricated. Sepals somewhat woolly; the outer ones with a minute adnate stipule on each side at the base. Stamens 3–5?—The figure of De Candolle seems to have been taken from a poor specimen.

2. ANYCHIA. *Michx.! fl.* 1. *p.* 112 (in part); *Juss. mem. mus. l. c.*

Queria, *Gærtn.; Nutt.*

Sepals ovate-oblong, united at the base, slightly concave, subsaccate at the apex, submucronate on the back. Petals or sterile filaments none. Stamens 2–3 or 5, inserted on the base of the sepals. Styles very short, distinct or united at the base, stigmatose within. Utricle included in the connivent sepals.—Annual, erect or somewhat procumbent, dichotomous herbs, with minute axillary or terminal solitary or more or less clustered subsessile flowers. Leaves oblong or lanceolate, mostly punctate, subpetiolate, very slightly ciliate.

1. *A. dichotoma* (Michx.): stem erect or decumbent at the base; at length much branched; stamens commonly 3.—*Michx.! fl.* 1. *p.* 113.

α. stem more or less pubescent above; leaves varying from linear-lanceolate and oblanceolate to elliptical; flowers more or less clustered.—A dichotoma, *DC. prodr.* 3. *p.* 369. A. Canadensis, *Ell. sk.* 1. *p.* 307; *Hook. fl. Bor.-Am.* 1. *p.* 252. Queria Canadensis, *Linn.; Nutt.! l. c.*

β. glabrous, slender; branches capillary; leaves oval or oblong, cuneiform at the base; flowers mostly exserted from the stipules at their base.—A. dichotoma β. capillacea, *Torr.! fl.* 1. *p.* 273. A. capillacea, *Nutt.! l. c.; DC. l. c.*

On hill-sides, &c. Canada! to Georgia and Kentucky! west to Arkansas! June–Aug.—Stems 4–10 inches high. Leaves obtuse or acute. Utricle minutely papillose.—Very variable in size and appearance. The var. β is perhaps the original Queria Canadensis of Linnæus; as it is the only form which is found in Canada or the adjacent portions of the United States.

2. *A. Baldwinii:* stems branched from the base, diffusely procumbent; leaves lanceolate, acute at each end; stamens 5.

Florida, *Baldwin!* W. Florida, *Mr. Ware!* Middle Florida, *Dr. Chapman!*— ① ? Stem minutely puberulent, loosely branched: branches a foot or more long, decumbent. Leaves 6–12 lines long, the uppermost smaller, ciliate-scabrous, usually much shorter than the internodes. Flowers rather larger than in A. dichotoma. Styles distinct nearly to the base, connivent.

3. SIPHONYCHIA.

Sepals linear, petaloid above, coherent into a tube below, slightly concave at the apex, unarmed. Petals represented by 5 subulate processes, alternate with the stamens, and inserted with them into the edge of the disk which lines the lower portion of the sepals. Style filiform, of the length of the calyx, minutely bifid at the apex. Utricle as in Paronychia.—A branching diffusely procumbent extensively spreading herb. Leaves oblanceolate, much shorter than the internodes. Flowers in small glomerate cymes at the ends of the branches.

S. Americana.—Herniaria Americana, *Nutt.! in Sill. jour.* 5. *p.* 291 (excl. syn ?); *DC. prodr.* 3. *p.* 368.
In dry sandy places ? E. Florida, *Ware* ex *Nuttall! Dr. Leavenworth!* Middle Florida, *Dr. Chapman!* Georgia, *Dr. Boykin!* S. Carolina, *herb. Nutt.!*— ① ? Stem minutely and retrorsely puberulent, much branched, extending 1–2 feet in length. Leaves slightly hairy below, ciliate, rather obtuse, almost veinless; the lowest an inch in length, those of the branches shorter. Stipules much shorter than the leaves. Bracts very small, similar to the leaves. Flowers very numerous, a line or a little more in length. Sepals white above, minutely hispid with hooked bristles at the base, connivent, cohering usually to about the middle. Stamens 5, shorter than the lobes of the calyx: anthers brown.

TRIBE II. SPERGULEÆ. *Bartl.*

Sepals nearly plane. Petals usually manifest, sometimes wanting. Styles or stigmas 3–5. Capsule 1-celled, 3–5-valved, many-seeded: placenta central.

4. STIPULICIDA. *Michx. fl.* 1. *p.* 21. *t.* 6.

Sepals distinct, oblong, attenuate at the base, with broadly scarious margins. Petals 5, as long as the sepals, cuneiform-oblong, narrow, entire, hypogynous. Capsule subglobose, 3-valved, about 20-seeded. Style very short: stigmas 3.—A small herb. Stem erect, setaceous, dichotomous. Radical leaves spatulate, petioled; cauline ones very minute, setaceous. Stipules multifid. Flowers minute, in small terminal fascicles.

S. setacea (Michx.! l. c.)—*Ell. sk.* 1. *p.* 51; *DC. prodr.* 3. *p.* 375. Polycarpon stipulifidum, *Pers.; Pursh, fl.* 1. p. 90.
In dry sandy places, N. Carolina! to Georgia! May.—① ? (♃ *Michx.*) Glabrous, 6–10 inches high. Petals white.

5. POLYCARPON. *Linn.; Gærtn. fr. t.* 129.

Sepals 5, nearly distinct, ovate, carinate-concave, with scarious margins. Petals 5, shorter than the sepals, often linear, emarginate. Stamens 3–5, inserted with the petals upon the minute nearly hypogynous disk. Styles 3, very short. Capsule 3-valved.—Low annuals. Leaves opposite or quaternate. Flowers cymose.

1. *P. tetraphyllum* (Linn.): leaves quaternate and opposite, spatulate-obovate; sepals mucronate; stamens 3.—*Eng. bot. t.* 1031; *Ell. sk.* 1. *p.* 182. Mollugo tetraphylla, *Linn. sp.* 1. *p.* 89.
About Charleston, S. Carolina! Introduced!—Much branched, 3–6 inches high. Petals white.

2. *P. depressum* (Nutt.! mss.): "very small, depressed, much branched; leaves opposite, spatulate, the petiole as long as the limb; flowers in small clustered cymes; sepals not mucronate; petals almost filiform; stamens 3–5.
"On bare sand-hills, near St. Diego, California.—Root slender, perpendicular. Stems much branched from the base, forming a small tuft, not rising from the ground. Leaves 2–3 lines long. Flowers very small." *Nutt.*

6. LŒFLINGIA. *Linn. act. Holm.; Lam. ill. t.* 19.

Sepals lanceolate, subulate, cuspidate, united at the base; the three exterior with a setiform appendage on each side near the base (adnate stipules). Petals minute, connivent. Stamens 3–5. Styles 3, distinct or united below, sometimes almost none. Capsule 3-valved, many-seeded.—Depressed annuals. Leaves subulate, the minute setaceous stipules adnate to the margins at the base. Flowers sessile in the axils of the branches and leaves.

1. *L. squarrosa* (Nutt.! mss.): "glandular-pubescent, much branched; leaves subulate-setaceous and (with the sepals) squarrose; stamens 3–5; stigmas sessile; capsule triangular, at length exserted."
"Sandy plains, St. Diego, California.—Flowers secund and somewhat fascicled. Seeds even: embryo almost straight." *Nutt.*

7. SPERGULA. *Bartl. ord. nat. p.* 302.

Spergula, *Linn.* (excluding the exstipulate species) with the stipulate species of Arenaria, *Linn.*—Spergularia, *A. St. Hil.*

Sepals nearly distinct. Petals 5, entire, mostly somewhat perigynous. Stamens 5–10, inserted with the petals. Styles 3–5. Capsule 3–5-valved, many-seeded. Seeds compressed, orbicular or reniform, often surrounded with a membranaceous margin.—Leaves mostly fascicled in the axils. Flowers loosely cymose.

§ 1. *Styles* 5.

1. *S. arvensis* (Linn.): leaves verticillate and mostly fascicled, subulate-linear; stipules minute; peduncles reflexed in fruit; stamens 10; seeds thick, with a very narrow margin.—*Gærtn. fr. t.* 130; *Pursh, fl.* 1. *p.* 320; *Ell. sk.* 1. *p.* 523; *Hook. fl. Bor.-Am.* 1. *p.* 92. Spergularia arvensis, *A. St. Hil. fl. Bras.* 2. *p.* 178.
Canada! to Georgia, in waste places: introduced. Also on the high grounds of the Red and Assiniboin rivers, according to Hooker (who mentions, besides, a much larger and more branching variety, S. ramosissima, *Dougl. mss.*, from Oregon). May–Aug.—① About a foot high, ascending. Cyme few-flowered. Petals white, rather longer than the calyx.—*Corn-Spurrey.*

§ 2. *Styles* 3.—SPERGULARIA, Pers.

2. *S. rubra:* stems decumbent, much branched; leaves narrowly linear, acute or mucronate, somewhat fleshy; stipules ovate, cleft; sepals lanceolate, with broadly scarious margins; petals red or rose-color; seeds compressed, with or without a membranaceous margin.—Spergularia rubra, *A. St. Hil. l. c.* Arenaria rubra, *Linn.; DC. prodr.* 1. *p.* 401; *Torr.! fl.* 1. *p.* 456; *Cham. & Schlecht. in Linnæa*, 1. *p.* 52; *Hook.! l. c. p.* 98. A. Canadensis, *Pers. syn.* 1. *p.* 504.

α. somewhat pubescent; leaves shorter or little longer than the internodes, slightly fleshy.—A. rubra, var. campestris, *Linn.; DC. l. c.*

β. nearly glabrous; leaves fleshy, usually much larger than the internodes.—A. rubra, var. marina, *Linn.; DC. l. c.*

γ.? flowers rather larger; seeds very commonly membranaceously margined.—Arenaria rubra, var., *Cham. & Schlecht. l. c.* A. media, *Linn.* A. marginata, *DC. fl. Fran.* 4. *p.* 793, *& prodr. l. c.*

In sandy fields, not far distant from the sea coast (α.), and in salt marshes (β) &c., Canada! to Florida!, and N. W. Coast! to California! April–Nov.— ① Stems 3–10 inches long, diffuse. Leaves variable in length, &c. Stamens 2–10, more commonly 3–5. Capsule a little longer than the calyx. Seeds sub-semicordate, reniform or nearly orbicular.—Having observed, as was previously noticed by Chamisso, seeds with a very broad margin, and others wholly destitute of a border, taken from the same capsule (in an American specimen, locality not recorded), we cannot but consider A. media, *Linn.* also as a variety of the present polymorphous and widely diffused species.

ORDER XXIV. CARYOPHYLLACEÆ. *Juss.*

Sepals 4–5, distinct or cohering in a tube, persistent. Petals 4–5 (occasionally none), unguiculate and inserted upon the pedicel of the ovary, or without claws and inserted on the outside of a fleshy disk which is sometimes perigynous. Stamens twice as many as the petals (rarely the same number and alternate with them, or fewer) and inserted with them: filaments subulate, sometimes cohering: anthers fixed by the middle, introrse. Ovary of 2–5 united carpels, often stipitate: styles 2–5, usually stigmatose the whole length on the inner surface. Capsule 2–5-valved, 1-celled by the obliteration of the dissepiments, or imperfectly (rarely completely) 2–5-celled, opening at the apex by twice as many teeth as stigmas, or by loculicidal dehiscence: placenta in the axis. Seeds campulitropous, numerous or rarely few. Embryo curved around the outside of mealy albumen.—Herbs. Stems with tumid nodes. Leaves opposite, sometimes connate, exstipulate, entire. Inflorescence centrifugal, dichotomous.

TRIBE I. ALSINEÆ. *DC.*

Sepals nearly or quite distinct. Petals not unguiculate, inserted on the outside of the hypogynous or more or less perigynous (sometimes lobed or glandular) disk. Stamens inserted upon the margin of the disk.

1. MOLLUGO. *Linn.; DC.; W. & Arn. prodr. Ind. or.* 1. *p.* 43.

Sepals 5, united at the base. Petals usually none, rarely 5, minute. Stamens 5 or fewer, opposite the sepals, sometimes 10. Styles 3. Capsule 3-valved, 3-celled, loculicidal, many-seeded.—Leaves actually opposite, and without stipules; but by abortion apparently alternate, with 2 stipules (one leaf being abortive its petiole splits up, leaving a portion, like a stipule, attached on each side to the base of the petiole of the perfect leaf); containing in their axils several leaves surrounding the base of the young branch, and forming radical or lateral tufts opposite to the peduncles; hence they are usually said to be verticillate. *Arn. l. c.*

1. *M. verticillata* (Linn.): stem branched, depressed; leaves spatulate, the upper ones lanceolate; pedicels 1-flowered, forming a simple sessile umbel; seeds smooth.—*Michx.! fl.* 1. *p.* 77; *Gærtn. fr. t.* 130; *DC. prodr.* 1. *p.* 391; *Hook. fl. Bor.-Am.* 1. *p.* 92.

Barren places throughout N. America! June–Sept.— ① Sepals colored within. Petals none. Stamens mostly 3. Seeds smooth, with 3 dorsal striæ.

2. MERKIA. *Fisch. in DC.; Cham. & Schlecht. in Linnæa*, 1. *p.* 59.

Sepals 5. Petals 5, unguiculate, entire. Stamens 5. Styles 3. Capsule sessile, inflated, depressed-globose and umbilicated, grooved, imperfectly 3-celled, 3-valved. Seeds numerous, minute, pyriform.—Weak, diffusely cæspitose. Leaves ovate, a little ciliate. Peduncles solitary, 1-flowered.

M. physodes (Fisch.)—*Hook. fl. Bor.-Am.* 1. *p.* 103. Arenaria physodes, *DC. prodr.* 1. *p.* 403.

Bay of Eschscholtz.—Capsule about half an inch in diameter. *Cham. & Schlecht.*

3. HONCKENYA. *Ehrh. beitr.* 2. *p.* 81. (not of *Willd.*)

Adenarium, *Raf.* (1818.)

Sepals 5, united at the base. Petals 5, perigynous, unguiculate, entire. Stamens 10, inserted, with the petals, into a glanduliferous disk. Styles 3–5. Capsule 3–5-valved, 1-celled, 8–10-seeded. Seeds large, smooth.—Fleshy maritime perennial herbs, with axillary subsolitary flowers.

1. *H. peploides* (Ehrh.): sepals ovate, obtuse, with scarious margins; petals spatulate-obovate; leaves and stems very fleshy.—Arenaria peploides, *Linn.; Willd. sp.* 2. *p.* 717; *Fl. Dan. t.* 624; *Pursh, fl.* 1. *p.* 317; *DC. prodr.* 1. *p.* 413; *Hook. fl. Bor.-Am.* 1. *p.* 102 (in part). Adenarium peploides, *Raf. in Desv. jour. phys.* (1818); *DC. l. c.* 3. *p.* 366.

Atlantic Coast! from lat. 40° to Labrador! and the Arctic Circle.—Stem extensively creeping, with numerous erect mostly simple branches, 8–12 inches high. Leaves short, ovate, abruptly acute or mucronate, very fleshy. Styles 3 in the lower, mostly 5 in the upper flowers. Flowers by abortion sometimes diœcious or polygamous.

2. *H. oblongifolia:* sepals lanceolate-ovate, acute; petals oblong-spatulate; leaves oblong, acute, attenuate at the base, and, as well as the stems, not very fleshy.—Arenaria peploides, *Cham. & Schlecht. in Linnæa*, 1. *p.* 57; *Bongard, veg. Sitcha. l. c. p.* 128. A. peploides β. major, *Hook.! l. c.*

Sitcha (*Bongard*) and both sides of Behring's Straits! (*Chamisso*) to De Fuca (*Scouler !*)—This plant, at once distinguishable from the preceding by its longer and narrower leaves, apparently less fleshy habit, and especially by the form of the sepals and petals, appears to take the place along the shores of the Northern Pacific, which H. peploides occupies along the Atlantic ocean. The plant of our own coast agrees well with the European, except that the stems are almost always simple.

4. SAGINA. *Bartl. ord. nat. p.* 305.

Sagina, *Linn.* and the exstipulate species of Spergula, *Linn. &c.*

Sepals 4–5, united at the base. Petals 4–5, entire, or none. Stamens 4–10. Styles 4–5. Capsule 4–5-valved, many-seeded.—Flowers solitary, axillary or terminal. Leaves often fascicled in the axils.

1. *S. procumbens* (Linn.): glabrous; stems procumbent; leaves linear, mucronate; peduncles acending in fruit; petals about half the length of the sepals; stamens, petals, and sepals 4–5.—*Gærtn. fr. t.* 129; *Eng. bot. t.* 880; *Ell. sk.* 1. *p.* 221; *Hook. ! fl. Bor.-Am.* 1. *p.* 92.
Springy ground, Connecticut! to South Carolina. Oregon, *Dr. Scouler!* May–Aug.—① or ② (♃ *DC. Hook.*) Stems 2–6 inches long. Capsule twice the length of the calyx. Petals sometimes none.

2. *S. decumbens:* mostly glabrous; stems decumbent, ascending; leaves linear-subulate, very acute; peduncles much longer than the leaves; petals and sepals 5, of equal length; stamens 10.—S. procumbens, *Withering.* Spergula saginoides, *Linn.; Michx. ! fl.* 1. *p.* 276; *DC. prodr.* 1. *p.* 394; *Hook. l. c.* S. decumbens, *Ell. sk.* 1. *p.* 523. S. nodosa, *Walt. Car. p.* 241.
In fields, &c. Canada! to Louisiana! Introduced? Also on the Pacific coast, *Chamisso, Hooker.* April–July.— ① Stems branching, 1–3 inches long. Petals obtuse. Capsule a little longer than the calyx.

3. *S. fontinalis* (Short & Peter): glabrous; stems procumbent, branched, dichotomous above; leaves linear-spatulate, rather obtuse; petals none; stamens 4–6.—*Short & Peter! 1st suppl. cat. Kentucky plants.*
Wet rocks, Kentucky! April–May.— ① Stems 8–15 inches long. Peduncles longer than the leaves. Sepals 4–5, ovate, rather obtuse. Capsule subglobose, much shorter than the sepals.

4. *S. apetala* (Linn.): pubescent; stem erect; leaves subulate; peduncles elongated and ascending in fruit; sepals and stamens 4; petals 4, very minute or none.—*Eng. bot. t.* 881; *DC. prodr.* 1. *p.* 389; *Torr. ! fl.* 1. *p.* 195.
Dry sandy fields, New-Jersey! Pennsylvania, & Maryland. Introduced? May–June.— ① Stems filiform, 2–3 inches high. Sepals lanceolate, acute, shorter than the capsule.

5. *S. erecta* (Linn.): glabrous; stem about 1-flowered; leaves linear, acute; peduncles strict; sepals, petals, and stamens 4.—*Eng. bot. t.* 609; *DC. l. c.* Mœnchia glauca, *Pers. syn.* 1. *p.* 153.
Baltimore? Introduced.— ① Stem 2 inches high. Sepals lanceolate-ovate, acute, as long as the capsule.

6. *S. nodosa:* erect; leaves subulate, glabrous, connate, the lower sheathing; upper ones proliferous in their axils; petals twice the length of the calyx; stamens 10.—Spergula nodosa, *Linn.; Eng. bot. t.* 964; *Hook. fl. Bor.-Am.* 1. *p.* 93.

Upper Canada to the Arctic Sea and N. W. Coast.—♃ Stem 2–6 inches high. Petals and sepals 5.

7. *S. subulata:* glabrous or slightly pubescent; leaves subulate, somewhat secund, mucronate; peduncles elongated; petals 5, as long as the calyx; stamens 5–10.—Spergula procumbens *β. Linn.* S. subulata, *Swartz; Eng. bot. t.* 1082; *Hook. l. c.*
Rocky Mountains, *Drummond.*

5. ARENARIA. *Linn.; Bartl. ord. nat. p.* 305.

Arenaria, excl. § Spergularia, *DC.*

Sepals 5. Petals 5, entire. Stamens 10 (or by abortion fewer). Styles 3, rarely 2 or 4. Capsule 3-valved; valves usually 2-parted. Seeds numerous, roundish, small.—Flowers terminal.

§ 1. *Flowers aggregated into heads or compact fascicles.*

1. *A. congesta* (Nutt.! mss.): "cæspitose, glabrous; leaves long, linear-subulate, pungent; flowers in roundish heads, with crowded membranous bracts; sepals ovate, membranaceous, obscurely 3-nerved, about half the length of the oblong petals.
"Shady hills in the Rocky Mountain range, about Bear River of the Lake of Timpanagos.—♃ Stem simple, a foot high. Lower leaves almost like those of a Pine, very narrow and more than 2 inches long [margin ciliate-scabrous]. Heads 1–3. Capsule coriaceous, about the length of the calyx. Seeds very small, angular.—A remarkable species, with somewhat the habit of Dianthus prolifer." *Nutt.*

2. *A. Franklinii* (Douglas): branches erect, fastigiate, numerous, fragile; leaves smooth (minutely ciliate-scabrous below), subulate-setaceous; flowers fascicled; sepals subulate, scarious, broadly 1-nerved, longer than the linear-oblong (obtuse) petals. *Hook. fl. Bor.-Am.* 1. *p.* 101. *t.* 35.
Oregon, from the great falls to the source of the Missouri, *Douglas.*—♃ Branching from the base, a span high. Leaves an inch long. Fascicles of flowers dense, crowded with bracts similar to the leaves. *Hook.*

3. *A. Hookeri* (Nutt.! mss.): "caudex branched, cæspitose; stems (3 inches high) simple, fastigiate, pubescent; leaves subulate-setaceous; flowers fascicled; sepals lanceolate-subulate, 1-nerved, rather shorter than the oblong obtuse sepals.
"Rocky Mountain range, on the summits of high hills (lat. 40°).—Bracts and sepals membranaceous.—Nearly allied to A. Franklinii, but with shorter leaves, bracts, and sepals." *Nutt.*

§ 2. *Flowers in loose dichotomous cymes, or solitary.*

* *Leaves gramineous.*

4. *A. nardifolia* (Ledeb.): cæspitose; leaves fascicled, linear-setaceous, very narrow, mucronate, glabrous; stems erect, glabrous, 1–3-flowered; petals obovate, longer than the very obtuse ovate 5-nerved sepals. *Hook.*—"*Ledeb. fl. Altai*"; *Hook. fl. Bor.-Am.* 1. *p.* 98. *t.* 32.
Shores of the Arctic Sea, *Dr. Richardson.*—♃ Leaves crowded below, with a curved mucronation. Capsule broadly ovate. *Hook.*—Our specimen of A. nardifolia from Altai, does not well agree with Hooker's figure and description, but has acutish sepals, and the cusps of the leaves straight.

* * *Leaves linear or subulate.*

5. *A. laricifolia* (Linn.): leaves subulate, denticulate-ciliate; stems ascending, somewhat scabrous or pubescent above, 2–6-flowered; sepals oblong, obtuse, 3-nerved, half the length of the petals; capsule longer than the calyx.—*Pursh, fl.* 1. *p.* 319; *DC. prodr.* 1. *p.* 98; *Cham. & Schlecht. in Linnæa*, 1. *p.* 54.

N. W. Coast, *Menzies*, *Chamisso.*

6. *A. juniperina* (Linn.): leaves subulate and rigidly pungent, the lower ones somewhat fascicled, the uppermost distant; stems erect, firm; sepals ovate, acute, about 1-nerved; petals obovate, nearly twice as long as the sepals; capsule roundish-ovate, 3-valved, scarcely exceeding the calyx. *DC.*—*Pursh, fl.* 1. *p.* 318; *Smith, ic. ined. t.* 35; *Hook. l. c.*

Labrador and Newfoundland, *Pursh.* Between Lakes St. Clair and Huron, *Douglas.*—A doubtful native of N. America. The plant of Pursh & Douglas is perhaps a variety of A. stricta.

7. *A. pungens* (Nutt.! mss.): "cæspitose, minutely glandularly pubescent; leaves subulate, canaliculate, pungent, the lower ones squarrosely imbricated and crowded; flowers few, subpaniculate; sepals lanceolate, obscurely 3-nerved, longer than the oblong-ovate petals.

"Summits of hills in the Rocky Mountain range (lat. 41°).—♃ Stems about 4 inches high, forming considerable cæspitose tufts. Leaves rigid, 3-nerved. Sepals unusually long and acute." *Nutt.*—Nearly allied to A. verna.

8. *A. squarrosa* (Michx.): densely cæspitose; stems minutely glandular-pubescent, few-flowered; leaves short, subulate-canaliculate, the lower ones densely squarrose-imbricate, rather obtuse, upper ones few; petals about 3 times the length of the ovate, very obtuse, nerveless sepals.—*Michx.! fl.* 1. *p.* 273; *Torr.! fl.* 1. *p.* 454; *DC. prodr.* 1. *p.* 403; *Ell. sk.* 1. *p.* 520. A. Caroliniana, *Walt. Car.* 1. *p.* 141.? A. imbricata, *Raf. in Desv. jour. bot.* 1. *p.* 229? A. Rafinesquiana, *Ser. in DC.*

In dry sand, New-Jersey! to Georgia! April–Sept.—♃ Root perpendicular, very long. Flowering branches 5–10 inches high, simple. Sepals herbaceous. Capsule ovate, obtuse, 3-valved, longer than the calyx. Styles sometimes 4.

9. *A. stricta* (Michx.): diffusely cæspitose, glabrous, branched from the base; leaves subulate-setaceous, 1-nerved, much fascicled in the axils; petals oblong-obovate, twice the length of the rigid, ovate, very acute, 3-ribbed sepals.—*Michx.! fl.* 1. *p.* 274; *Ell. sk.* 1. *p.* 520; *DC. prodr.* 1. *p.* 503.

α. strict, few-flowered; leaves erect, crowded, longer than the internodes.

β. diffusely spreading; leaves spreading or recurved, often shorter than the internodes; branches of the cyme spreading.—A. stricta, *Bigel.! fl. Bost. ed.* 2. *p.* 180. A. stricta β., *Hook. fl. Bor.-Am.* 1. *p.* 99. *t.* 33.

Rocks and barren ground, Canada! to S. Carolina and Arkansas! and north to the Arctic Sea (*Hook.*) May–July.—♃ Stems 3–10 or 12 inches high. Capsule about as long as the calyx.—The var. β. is by far the most common in the United States, and has very slender peduncles and pedicels; but the plant varies according to situation, &c.

10. *A. tenella* (Nutt.! mss.): "erect, slender, somewhat branched from the base; leaves filiform-subulate, acute; peduncles minutely glandular-pubescent; petals oblong, nearly twice the length of the acute 3-nerved shortish sepals.

"Rocky places, plains of the Oregon! and Arkansas.—① Allied to A. tenuifolia, but with the petals larger and the leaves longer." *Nutt.*—We have this plant also from Dr. Scouler under the name of A. stricta, to which species it is doubtfully referred by Hooker. The leaves are scarcely if at all fascicled in the axils, the root is annual, and the sepals are less strongly nerved and less rigid than in A. stricta.

11. *A. Pitcheri* (Nutt.! mss.): "erect and slender, glabrous, fastigiately branched, few-flowered; leaves linear-filiform, obtuse, not fascicled; peduncles slightly glandular-pubescent; petals oblong, somewhat exceeding [nearly twice the length of] the lanceolate strongly 5- [sometimes 3-] nerved sepals." *Nutt.*

Plains of Arkansas, *Nuttall! Dr. Pitcher!* Texas, *Drummond! Dr. Leavenworth!*—① Stem 3–6 inches high, with filiform branches. Leaves very narrow but flat.—Nearly allied to A. patula, and also to A. tenuifolia of Europe, as Mr. Nuttall very correctly remarks.

12. *A. patula* (Michx.): branched from the base, diffuse; forks of the cyme divaricate; leaves linear, very narrow, obtuse, spreading; petals spatulate, emarginate, twice the length of the lanceolate very acute 3–5-nerved sepals.—*Michx.! fl.* 1. *p.* 273; *DC. prodr.* 1. *p.* 405.

On rocks, Kentucky, *Dr. Short!* and mountains of Virginia, *Prof. Ruffner!*— ① (②?) Stems weak, almost filiform, 6–10 inches long, glabrous to the naked eye, but minutely glandular-pubescent under a lens. Cyme 4 or 5 to 20-flowered, much spreading: pedicels almost setaceous. Leaves often slightly fascicled in the axils.

13. *A. glabra* (Michx.): cæspitose, glabrous; stems filiform, decumbent at the base, 8–12-flowered; leaves linear-setaceous, spreading; branches of the cyme and very slender pedicels divaricate; petals obovate-oblong, twice the length of the oval, obtuse, membranaceously-margined, nerveless sepals.—*Michx.! fl.* 1. *p.* 274; *DC. prodr.* 1. *p.* 407, not of *Ell.* or of *Torr. fl.*

On rocks in N. Carolina, *Michaux! Schweinitz!* Georgia, *Le Conte!* "Table Rock, Alabama," *herb. Schweinitz!*—♃ Plant growing in dense grass-like tufts: stems very slender, and commonly branched above, about 6 inches high. Leaves nearly half an inch long, almost setaceous. Pedicels elongated, setaceous. Flowers smaller than in A. patula and A. Grœnlandica.—This little known species appears to be confined to the more or less mountainous portions of the Southern States; the A. glabra of Elliott, growing in the low country being evidently Stellaria uniflora, *Walt.*

14. *A. Grœnlandica* (Spreng.): cæspitose, glabrous; stems low, decumbent at the base, 1–5-flowered; leaves very narrowly linear, obtuse; pedicels filiform, nearly erect; petals obovate-cuneiform, entire or with a slight notch, twice the length of the rather oblong, very obtuse, membranaceously margined, nerveless sepals.—*Spreng. syst.* 2. *p.* 402. Stellaria Grœnlandica, "*Retz. fl. Scan.*"; *DC. prodr.* 1. *p.* 398; *Fl. Dan. t.* . . . Arenaria glabra, *Torr.! fl.* 1. *p.* 455 (excl. syn.); *Bigel.! fl. Bost. ed.* 2. *p.* 180.

Greenland, *Vahl, in herb. Schw.!* Labrador, *herb. Schweinitz!* Crevices of rocks, with alpine plants, on the summits of the White Hills, New-Hampshire, *Boott! Oakes! Pickering!* of the Adirondack! and Shawangunk! Mountains, New-York. July–Aug.—♃ Stems very numerous, about 3 (rarely 5) inches high. Leaves almost subulate, but obtuse, 3–5 lines long, erect or spreading. Flowers large for the size of the plant, larger than those of A. glabra. Lobes of the disk from which the stamens arise slightly thickened and glandular.—The identity of our plant with Stellaria Grœnlandica, first suggested by Dr. Pickering, is confirmed by a specimen from Greenland in herb. Schweinitz, so named by Vahl.

15. *A. brevifolia* (Nutt.! mss.): glabrous, not cæspitose; stems filiform, erect, simple, 2–5-flowered; leaves minute, erect (many times shorter than the internodes), lanceolate-subulate, nerveless; sepals oblong, obtuse, with scarious margins, about the length of the 3-valved capsule; petals obovate-

oblong, nearly twice the length of the calyx.—*Nutt.! mss. in herb. acad. Philad.*

On rocks, Georgia, *Nuttall!*—① Plant 2–4 inches high, very slender, with 3 or 4 pairs of cauline leaves from 1–2 lines long. Flowers small, white, on filiform peduncles.

16. *A. verna* (Linn.): erect, cæspitose, pubescent or glabrous; leaves linear-subulate, nerved, erect; cyme erect, few or many-flowered; sepals ovate, acute, 3-nerved, mostly a little longer than the petals. *Hook.—Eng. bot. t.* 512; *DC. prodr.* 1. *p.* 405; *Hook. fl. Bor.-Am.* 1. *p.* 99.

Oregon and Subarctic America, *Hooker;* James' Peak, Rocky Mountains, lat. 41°, *Dr. James!*

17. *A. propinqua* (Richardson): cæspitose, hairy (hairs mostly glandular); leaves linear-subulate, acute, 3-nerved; sepals acute, 3-nerved, about the length of the petals but shorter than the capsule. *Richards. in app. Frankl. journ. p.* 17; *Hook. l. c.*

Arctic America, and summits of the Rocky Mountains.—Habit of A. verna; but the flowers are smaller: perhaps not distinct. *Hook.*

18. *A. hirta* (Wormskiold): leaves linear-subulate, obtuse, 2-sulcate, minutely hirsute; stems 2–3-flowered; sepals 3-nerved, acute, shorter than the capsule; petals oblong, a little shorter than the calyx. *DC.—Wormsk. in fl. Dan. t.* 1646; *DC. prodr.* 1. *p.* 405; *Cham. & Schlecht. in Linnæa*, 1. *p.* 56; *Hook. l. c.*

Kotzebue's Sound, *Beechey!* Greenland.—♃ Glabrous or pubescent, 3 inches high.

19. *A. rubella* (Hook.): stems cæspitose, numerous; peduncles terminal, pubescent, 1-flowered; leaves linear-subulate, obtuse, 3-nerved; petals oblong-lanceolate, a little shorter than the lanceolate 3-nerved (mostly) very acute sepals; capsule 4-valved, shorter than the sepals. *Hook.! in Parry's 2nd voy. app. p.* 391, *& in fl. Lond. t.* 200, *& fl. Bor.-Am.* 1. *p.* 100. A. quadrivalvis, *R. Br. in Parry's 1st voy. app. p.* 271. Alsine rubella, *Wahl. fl. Lapp. t.* 6, fide *Hook.*

Greenland and Arctic America!—♃ Plant 1–2 inches high. Leaves obtuse or rather acute. Stigmas 3–5.

20. *A. Rossii* (R. Brown): glabrous; leaves subulate-triquetrous, rather obtuse, nerveless, scarcely equalling the flower; peduncles 1-flowered; petals oblong, a little exceeding the obscurely 3-nerved sepals.—*R. Br. in Parry's 1st voy. app. p.* 272.

β. taller; leaves exceeding the calyx, mostly shorter than the internodes, with manifest lateral nerves; petals as long as the sepals. *R. Br. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 100.

Arctic America! and Rocky Mountains from lat. 54°–57°.—Flowers sometimes apetalous. *Hook.*

21. *A. arctica* (Steven): cæspitose; leaves linear-subulate, obtuse, fleshy, margin minutely ciliate; peduncles glandular-pubescent, 1- (rarely 2–3-) flowered; petals about twice the length of the very obtuse 3-nerved sepals.

α. leaves 3-striate; sepals oblong; petals obovate.—A. arctica, *Stev. in DC. prodr.* 1. *p.* 404; *Hook. l. c.* (*α.* & *β.*) *t.* 34.

β. leaves nerveless; sepals ovate; petals oblong-spatulate.—A. pumilio, *R. Br.; Hook. in Parry's 2nd voy. app. p.* 391, *& fl. Bor.-Am. l. c.*

γ. leaves obscurely 3-nerved, carinate, serrulate-ciliate; sepals oblong, glandular-pubescent; petals oblong, half as long again as the sepals.—A. obtusa, *Torr.! in ann. lyc. New-York.* 2. *p.* 170. A. arctica *γ.* stenopetala, *Hook. l. c.?*

Arctic America. *γ.* Rocky Mountains, on James' Peak, lat. 41°, *Dr. James!*—♃ Habit of Silene acaulis. Leaves mostly curved to one side. Capsule ovate.

22. *A. macrocarpa* (Pursh): cæspitose; leaves crowded, linear-subulate, plane, the margin ciliate; peduncle terminal, 1-flowered, leafy; petals ovate, twice the length of the calyx; capsule oblong, thrice the length of the calyx. *Pursh, fl.* 1. *p.* 318; *Cham. & Schlecht. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 101.
N. W. Coast, *Pursh.*—Hardly distinct from A. arctica. *Hook.*

*** *Leaves lanceolate, ovate, or roundish.*

23. *A. serpyllifolia* (Linn.): diffuse, retrorsely pubescent; leaves (small) ovate, acute, minutely ciliate; sepals lanceolate, acuminate, hairy, 3–5-nerved, nearly twice the length of the petals, equal to the ovate, 6-toothed capsule.—*Michx.! fl.* 1. *p.* 274; *Gærtn. fr. t.* 130; *DC. prodr.* 1. *p.* 411; *Ell. sk.* 1. *p.* 518.
Sandy fields, Massachusetts! to Georgia! Introduced. April–July.— ① Much branched from the base, 3–10 inches high. Flowers axillary and terminal.

24. *A. ciliata* (Linn.): leaves ovate or obovate, bullate-rugose, more or less nerved and ciliate; stems procumbent; sepals lanceolate, acute, nerved, shorter than the petals, as long as the ovate 6-valved capsule. *Eng. bot. t.* 1745; *DC. prodr.* 1. *p.* 411.
Greenland, *Sabine.*

25. *A. Purshiana* (Seringe): stem dichotomous, diffuse; leaves oval, rather acute; peduncles alternate, axillary, solitary, elongated; sepals acute; petals as long as the calyx. *Pursh.*—*DC. prodr.* 1. *p.* 414. A. thymifolia, *Pursh, fl.* 1. *p.* 317.
Sea-shore, Labrador, *herb. Banks* ex *Pursh.*—Perhaps Stellaria humifusa. A specimen from Labrador in herb. Schweinitz, marked A. thymifolia appears to be that plant.

26. *A. lateriflora* (Linn.): minutely pubescent; stem erect, slender, simple or branched; leaves oblong or oval, obtuse; peduncles lateral and terminal, 2-flowered, one of the pedicels bibracteolate near the middle; petals twice the length of the sepals.—*Pursh, fl.* 1. *p.* 317; *DC. prodr.* 1. *p.* 412; *Hook.! fl. Bor.-Am.* 1. *p.* 102. *t.* 36. Stellaria biflora, *Pursh! fl.* 1. *p.* 317.
In damp rather shady places, from lat. 40° to the Arctic Sea! June.—♃ Stem 4–8 inches high. Leaves pale green, punctate, hairy on the margin and midrib. Peduncle mostly solitary. Petals and sepals oblong, obtuse. Filaments pubescent.

27. *A. macrophylla* (Hook.): stem slender, erect, dichotomously branched; leaves spreading, lanceolate, acute at each end, glabrous; peduncle terminal [or lateral], 2–3-flowered; sepals ovate, sharply acuminate, longer than the petals and capsule. *Hook. fl. Bor.-Am.* 1. *p.* 102. *t.* 37.
Shady woods, Oregon (*Douglas, Nuttall!*) and N. W. Coast.—Habit of the preceding. Very near A. umbrosa, *Ledeb.*

‡ *Doubtful species.*

28. *A. fasciculata* (Pursh, not of Gouan): nearly glabrous, cæspitose; stems strictly erect; leaves subulate, pungent, striate; flowers densely fascicled; sepals subulate, striate; petals very short. *Pursh, fl.* 1. *p.* 319.
Canada (in herb. Lambert), *Pursh.*

29. *A. buxifolia* (Poir.): pubescent; leaves ovate-oblong, sessile; stems creeping; peduncles dichotomous, about 2-flowered; sepals linear, short, obtuse, with membranaceous margins, a little shorter than the petals, as long as the ovate, obtuse (5-valved?) capsule. *DC.*—*Poir. dict.* 6. *p.* 262; *DC. prodr.* 1. *p.* 411.
Canada, *Poiret.*

6. STELLARIA. *Linn.*; *Torr. fl.* 1. *p.* 453.

Sepals 5, somewhat united at the base. Petals 5 (rarely by abortion fewer or none), 2-cleft or lobed, often perigynous. Stamens 10 (or by abortion 3–8). Styles 3, sometimes 4. Capsule 1-celled, 3- (sometimes 4-) valved; valves usually 2-parted, membranaceous. Seeds numerous.—Herbs, mostly inhabiting moist or shady places. Flowers terminal in dichotomous cymes, or solitary.

The apparently lateral peduncles of several species are at first terminal, but become pseudo-axillary by the evolution of a branch in the axils of the upper leaves, which continues the stem. So also in Arenaria lateriflora, &c.

§ 1. *Styles always* 3*: petals hypogynous, mostly longer than the calyx.*

1. *S. media* (Smith): stems procumbent, with an alternate pubescent line; leaves ovate, glabrous; petals oblong, deeply divided, shorter than the sepals; stamens 3–10.—*Eng. bot. t.* 537; *DC. prodr.* 1. *p.* 398; *Hook. fl. Bor.-Am.* 1. *p.* 94. Alsine media, *Linn.* Holosteum succulentum, *Linn.*; *Colden.*

Waste places throughout the United States! California and N. W. America. Introduced. March–Dec.—① Petioles short, ciliate. Calyx hairy. Pedicels deflexed in fruit.—*Chickweed.*

S. prostrata (Baldw.): stem procumbent, fistulous, somewhat pubescent; leaves ovate, acuminate; the lower ones on slender petioles, subcordate; pedicles elongated; petals twice the length of the sepals, deeply divided, with linear segments; stamens 7–8.—*Baldw.! in Ell. sk.* 1. *p.* 518.

In wet places E. Florida, *Baldwin!* Georgia, Le Conte! March–May. —① Stem 1–4 feet long. Petioles ciliate, longer than the leaves. Sepals ovate, nearly glabrous. Flowers small.

3. *S. pubera* (Michx.): stems decumbent, spreading, with two opposite pubescent lines; leaves oval-oblong, sessile, minutely ciliate; pedicels short; petals deeply bifid, longer than the sepals.—*Michx.! fl.* 1. *p.* 273; *Ell. sk.* 1. *p.* 517; *Darlingt. fl. Cest. p.* 274.

On shady rocks, Pennsylvania! [lat. 40°] to Georgia! west to Kentucky! April–June.—♃ Stems 6–12 inches long, below often with a single alternate hairy line. Leaves 1–2½ inches long. Flowers ½ an inch in diameter. Stamens 10. Capsule ovoid-globose.

4. *S. Jamesii* (Torr.): viscidly pubescent; leaves lanceolate, elongated, slightly falcate, closely sessile; cyme divaricate; petals 2-lobed, about twice the length of the oblong acute sepals.—*Torr. in ann. lyc. New-York*, 2. *p.* 169.

Rocky Mountains, about lat. 40°, *Dr. James!*—Stem weak. Leaves about 4 inches long and 4 lines broad, acute. Capsule as long as the calyx, deeply valved. Seeds few, rugose.

5. *S. Nuttallii:* minutely glandular, branched from the base, erect or ascending; leaves linear, obtuse, rather fleshy; cyme few-flowered; petals obcordate, twice the length of the ovate obtuse nearly nerveless sepals

Prairies of Arkansas, *Nuttall! Dr. Pitcher!* Western Louisiana, *Dr. Leavenworth!* Texas, *Drummond! Dr. Leavenworth!* March–April.—① Plant 4–6 inches high. Leaves nearly glabrous, much shorter than the internodes, ½–¾ an inch in length, 1–2 lines wide, a little narrowed at the base. Flowers when expanded more than ½ an inch in diameter: petals with a broad, rather deep emargination: sepals with scarious margins. Capsule a little longer than the calyx, deeply 3-valved: valves entire. Seeds minute, dark brown, tuberculate.—Habit of Cerastium nutans. The sinus of the petals is so shallow that the plant might be ranked with Arenaria almost as well as with Stellaria.

6. *S. macropetala*: glabrous, branching from the base; stems erect, slender; leaves linear and very narrow, somewhat fleshy, acute; cyme few-flowered; petals obovate-spatulate, 2-lobed, more than twice the length of the ovate-lanceolate 3-ribbed sepals.

Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* April.—① Stem 5–10 inches high. Leaves an inch or more long; the lower ones rather obtuse, as long as the internodes. Flowers smaller than in S. Nuttallii, but with the petals longer in proportion, much more attenuate below, and with a deeper and narrower sinus. Sepals acute, rather rigid, not scarious.

7. *S. uniflora* (Walt.): glabrous, branching from the base; stems erect, very slender; leaves subulate-linear, acute; peduncles axillary, filiform, 1-flowered; petals obcordate with a shallow sinus, twice the length of the oblong acutish nearly nerveless sepals.—*Walt. Car. p.* 141. Arenaria glabra, *Ell. sk.* 1. *p.* 520, not of *Michx.*

Swamps, N. Carolina (*Croom!*) to Georgia. May.—Stem 10 inches or more high. Leaves an inch long, hardly a line wide, mucronate. Peduncles solitary, not bracteolate, 2–3 inches in length. Sepals rather membranaceous, with scarious margins. Capsule ovoid, as long as the calyx.—Resembles S. macropetala much more closely than Arenaria glabra, with which it has been generally confounded. Habit wholly that of a Stellaria.

8. *S. cerastoides* (Linn.): stems cæspitose and decumbent, somewhat dichotomous; leaves oblong, pubescent; peduncles in pairs, 1-flowered, deflexed in fruit; petals exceeding the obtuse sepals; capsule oblong, almost twice the length of the calyx. *DC. prodr.* 1. *p.* 398; *Hook. plants of Sabine's voy. in trans. Linn. soc.* 14. *p.* 8.

Greenland, *Sabine.*

9. *S. humifusa* (Rottb.): glabrous; stems procumbent, branched; leaves ovate, sessile, fleshy; peduncles solitary, terminal, short, 1-flowered; petals 2-parted, rather longer than the acutish nerveless sepals. *Hook.*—"*Rottb. in act. Hafn,* 10. *t.* 4"; *Hook.! in Parry's 2nd voy. app. p.* 391, *& fl. Bor.-Am.* 1. *p.* 97; *Bong. veg. Sitcha, l. c. p.* 127. S. crassifolia, *Cham. & Schlecht. l. c.* fide *Hook.* Arenaria thymifolia, *Pursh?*

Greenland, Arctic Sea! Sitcha.—① Stems 2–3 inches high. Peduncles filiform. Sepals obscurely 3-nerved. *Bongard.*

10. *S. gracilis* (Richardson): glabrous; stem weak; sterile branches gemmiferous; leaves lanceolate, somewhat succulent; peduncle solitary, axillary or terminal, elongated, 1-flowered; petals 2-parted, longer than the glabrous acute nerveless sepals. *Hook.*—*Richards. app. Frankl. journ. p.* 17; *Hook. fl. l. c.*

Hudson's Bay, &c., *Richardson.*—Capsule 6-valved.

§ 2. ***Styles* 3 *or* 4: *petals more or less perigynous, often minute or wanting.*** (Spergulastrum, *Michx.*—Micropetalon, *Pers.*—Larbræa, *St. Hil.*)

11. *S. longipes* (Goldie): shining or glaucescent; stems decumbent at the base, or procumbent with erect or ascending branches; leaves mostly rigid, linear or lanceolate (broadest at the base), acute; peduncles (cymose or nearly simple) with rather large ovate scarious bracts; petals a little longer than the ovate, obtuse or acutish, obscurely 3-nerved, scariously-margined sepals.

α. slender; leaves more or less flaccid, rather spreading; branches 6–10-flowered; peduncles and pedicels filiform; the terminal (middle) ones elongated; sepals obtuse.—S. longipes, *Goldie, in Edinb. phil. journ.* 6. *p.* 185; *DC. prodr.* 1. *p.* 400; *Hook.! fl. Bor.-Am.* 1. *p.* 95.

β. slender, rather rigid; leaves more erect, and pungent, sometimes almost subulate; sepals acute.—S. stricta, *Richards. app. Frankl. journ. ed.* 2. *p.* 15; *Hook. l. c.*—1. stems sparsely pubescent. *Hook.* 2. stems glabrous. *Hook.!*—S. palustris, *Richards. l. c. ed.* 1. 3. leaves somewhat glaucous. *Hook.*

γ. 3–4 inches high; stems 1–2-flowered; sepals acute; otherwise like *α.* & *β.*

δ. glaucous; branches erect from creeping stems, 3–6 inches high, 1–3-flowered; leaves erect, lanceolate, rigid, carinate; sepals rather obtuse.—S. læta, *Richards.! app. Frankl. journ. ed.* 2. *p.* 16; *Hook.! app. Parry's voy., & in fl. Bor.-Am.* 1. *p.* 96.

ε. glabrous or somewhat pubescent; branches 1–2 inches high, 1–3-flowered; leaves ovate-lanceolate (the lowest sometimes ovate, obtuse), sometimes sparsely ciliate at the base; sepals acutish.—S. Edwardsii, *R. Br.! in app. Parry's 1st voy. p.* 271; *Richards. l. c.; Torr. in ann. lyc. New-York,* 2. *p.* 170; *Hook.! fl. Bor.-Am.* 1. *p.* 96. *t.* 31; *Cham. & Schlecht. in Linnæa,* 1. *p.* 48. S. nitida, *Hook. in app. Scoresb. Greenl. p.* 411. S. ovalifolia, *Hook. fl. l. c.?*

α. & *β.* Woods and shores, Canada! to Subarctic America! west to Oregon (*Nuttall!*) Shore of L. Ontario and Michigan! *γ.* Rocky Mountains, lat. 40°, *Dr. James!* *δ.* Arctic! and Subarctic America, and Rocky Mountains. *ε.* Shores of the Arctic Sea! Behring's Straits, and Rocky Mountains, lat. 40° (*Dr. James!*)—We have little hesitation in carrying out the intimations of Sir Wm. Hooker, and considering these plants as modifications of one species. Vars. *α.* & *β.* may be distinguished from S. longifolia by the shorter and less spreading leaves, always broadest at the base, and by the somewhat larger flowers and obscurely nerved sepals.

12. *S. nitens* (Nutt.! mss.): "subcæspitose, smooth and shining; stems erect, sparsely hairy below, filiform, naked above; leaves lanceolate-subulate, short, acute; petals 2-lobed and (as well as the capsule) much shorter than the lanceolate very acute 3-nerved sepals.

"Plains of the Oregon, in moist or shady places.—① Plant 3–5 inches high, spreading. Leaves rigid, ¼ of an inch long. Sepals shining, with scarious margins. Cyme few-flowered. Flowers expanding only in the sunshine. Habit of an Arenaria." *Nutt.*

13. *S. longifolia* (Muhl.): stem branching, weak, glabrous; leaves linear, mostly attenuate at the base, acutish; cyme divaricate, naked, with lanceolate scarious bracts; petals cleft nearly to the base, at first shorter, at length longer than the acute 3-nerved sepals.—*Torr.! fl.* 1. *p.* 452 (excl. syn. of S. longipes); *DC. prodr.* 1. *p.* 400; *Hook.! fl. Bor.-Am.* 1. *p.* 94; *Bong. veg. Sitcha, l. c. p.* 126. S. graminea, *Bigel. fl. Bost. ed.* 1. *p.* 110; *Cham. & Schlecht. in Linnæa,* 1. *p.* 49, fide *Bongard & Hook.* Spergulastrum gramineum, *Michx.! fl.* 1. *p.* 276. Micropetalon gramineum, *Pers.*

Shady damp places, Virginia! to Subarctic America! Oregon! to Sitcha! June.—♃ Stem flaccid, 4–18 inches high; the angles usually retrorsely scabrous. Leaves elongated, spreading to a right angle with the stem. Pedicels filiform. Stamens 8–10. Capsule subglobose, about the length of the calyx.

14. *S. borealis* (Bigelow): glabrous, flaccid; leaves broadly lanceolate, acute, veinless; petals (sometimes none) 2-parted, nearly the length of the lanceolate acute nerveless sepals; capsules ovate-oblong, nearly twice the length of the calyx; styles 4.—S. borealis, *Bigel.! fl. Bost. ed.* 2. *p.* 182; *Hook.! fl. Bor.-Am.* 1. *p.* 94. S. lanceolata, *Torr.! fl.* 1. *p.* 45, not of

Poir. Spergulastrum lanceolatum, *Michx.! fl.* 1. *p.* 275. Micropetalon lanceolatum, *Pers.*

α. leafy to the summit; peduncles in the forks of the branches (i. e. terminal) solitary, 1-flowered.

β. upper leaves reduced to bracts (not scarious); cyme spreading.

In wet shady swamps, New-York! from about lat. 42° to Arctic America! June–July.— ① (♃ ?) Stem 4–15 inches high, weak. Leaves an inch or more long, 1-nerved, but with no lateral veins. Flower at first terminal, on a filiform pedicel, becoming axillary by the evolution of a branch from the axil of each of the upper leaves; branches dichotomous in like manner: flowers more commonly apetalous. Later in the season the lateral branches are also often floriferous, producing the ordinary dichotomous cymes; and then the flowers bear manifest petals. Stamens and petals distinctly perigynous. Seeds smooth.—Certainly very distinct from S. longifolia, and much more closely allied to the succeeding species.

15. *S. aquatica* (Pollich): weak and decumbent, nearly glabrous; leaves oblong, acute, veined; petals 2-cleft, rather shorter than the lanceolate very acute 3-nerved sepals; capsule ovoid, about as long as the calyx; styles 3.— "*Poll. pal.* 1. *p.* 429;" *DC. prodr.* 1. *p.* 398; *Cham. & Schlecht. l. c. p.* 50? S. uliginosa, *Eng. bot. t.* 1074; *Muhl.! cat. p.* 47. S. borealis, *Darlingt.! fl. Cest. ed.* 2. *p.* 274. Larbræa aquatica, *St. Hil. mem. mus.; DC. prodr.* 3. *p.* 366. L. uliginosa, *Hook. l. c. p.* 93.

Swampy springs, Chester County, Pennsylvania, *Dr. Darlington!* Near Philadelphia, *Dr. Pickering!* Rocky Mountains, *Hooker.* Unalaschka, *Chamisso.* May.— ♃ Stem 6–12 inches long, very slender. Leaves about ½ an inch long; veins very manifest under a glass. Flowers smaller than in S. borealis. Seeds minutely tuberculate.—The inflorescence consists of the ordinary central 1-flowered ebracteolate peduncle, and two lateral few-flowered peduncles evolved somewhat later; and the stem is continued by a fourth or adventitious branch, which throwing the inflorescence on one side, appears like the main stem.—The character and description here given are drawn from specimens collected by Dr. Darlington, which, as that excellent botanist remarks, agree minutely with the European species to which they are here referred. The shorter leaves and capsules, the tuberculate seeds, and especially the inflorescence, clearly distinguish the plant from S. borealis.

16. *S. crispa* (Cham. & Schlecht.): glabrous; stems diffuse, decumbent; leaves veiny, ovate, abruptly acute or acuminate at each end, the margin undulate; flowers axillary, solitary on short peduncles hardly longer than the leaves; petals mostly wanting, or 2-parted and very much shorter than the lanceolate 3-nerved sepals.—*Cham. & Schlecht. in Linnæa,* 1. *p.* 51; *Bong. veg. Sitcha, l. c. p.* 127.

Unalaschka, *Chamisso;* Sitcha, *Bongard;* Oregon, near Fort Vancouver, in deep pine-woods, *Nuttall!*— ♃ Stems nearly simple. Leaves much shorter than the internodes, ½ an inch or less in length, often obtuse or subcordate at the base, with a central and an intramarginal nerve, the intervening space beautifully reticulated. Capsule about the length of the calyx. Seeds smooth.

17. *S. calycantha* (Bongard): cæspitose; stems decumbent, flaccid; leaves ovate-lanceolate, connate, the margin minutely ciliate with white hairs, much shorter than the internodes; cyme dichotomous; peduncles filiform; petals none; sepals ovate-lanceolate, 3-nerved, a little shorter than the obtuse subglobose capsule. *Bong. veg. Sitcha, l. c. p.* 127.—Arenaria calycantha, *Ledeb.*

Sitcha, *Bongard.*—Leaves about 5 lines in length. Styles mostly 4.

18. *S. brachypetala* (Bongard): stem simple, erect; leaves linear-lanceo-

late, rather thick; petals and capsule half the length of the sepals. *Bong. veg. Sitcha, l. c. p.* 126.

Sitcha.—Glabrous, a foot or more high. Cyme dichotomous. Petals 2-parted. Allied to S. crassifolia. *Bongard.*

19. *S. lanuginosa:* minutely woolly-pubescent; stem decumbent, elongated, much branched; leaves oblong-lanceolate, mucronulate, attenuate at the base; peduncles solitary, axillary, 1-flowered; petals mostly wanting; sepals ovate-lanceolate, acute, as long as the obtuse capsule.—Spergulastrum lanuginosum, *Michx. fl.* 1. *p.* 275. Micropetalon lanuginosum, *Pers.* Stellaria elongata, *Nutt.! gen.* 1. *p.* 289; *DC. prodr.* 1. *p.* 99. Arenaria diffusa, *Ell. sk.* 1. *p.* 519.

Shady moist places, N. Carolina! to Florida (Apalachicola, *Dr. Chapman!*) and Louisiana west of the Mississippi, *Dr. Hale!*—① Leaves somewhat fascicled in the axils, attenuate at the base, as if petioled, punctate under a lens. Petals (rarely 3, entire. *Mr. Curtis, in litt.*) (oval, scarcely ⅓ the length of the calyx, *Elliott*) none according to *Michaux & Nuttall.*

[illegible] nearly = to the [illegible]

7. CERASTIUM. *Linn.; Gærtn. fr. t.* 130; *DC. prodr.* 1. *p.* 414.

Sepals 5, somewhat united at the base. Petals 5, bifid. Stamens 10, or rarely fewer. Styles 5. Capsule 1-celled, cylindrical or roundish, membranaceous, opening at the apex by 10 (rarely 5) teeth. Seeds numerous.—*Chickweed.*

§ 1. *Capsules cylindrical, with circinate teeth.*—STREPHODON, Seringe

1. *C. stellarioides* (Moçino): stem erect, branched, about 3-flowered; leaves oblong, acuminate; pedicels 1-flowered, terminal; sepals lanceolate; petals semibifid, twice the length of the calyx. *DC. prodr.* 1. *p.* 415.

Nootka Sound, *Moçino* in *DC.*

§ 2. *Capsules cylindrical or ovate; teeth straight with the margin revolute.*—ORTHODON, Seringe.

* *Petals not longer than the calyx.*

2. *C. vulgatum* (Linn.): hirsute, pale green; stems ascending or spreading; leaves ovate or obovate, very obtuse, attenuate at the base; flowers somewhat capitate, when young longer than the pedicels; capsule attenuate, twice the length of the calyx.—*Eng. bot. t.* 789; *DC. prodr.* 1. *p.* 415; *Darlingt.! fl. Cest. ed.* 2. *p.* 277. C. semidecandrum, *Walt. Car. p.* 241. (fide *Ell.*); *Pursh! fl.* 1. *p.* 320. C. hirsutum, *Muhl. cat. p.* 46; *Ell.! sk.* 1. *p.* 524. C. connatum, *Beck, fl. p.* 55.

In cultivated grounds and waste places, Canada to Georgia! Louisiana! and Arkansas! Introduced? April–Sept.—① Stem 6–12 inches high, slightly viscid when young.—Often confounded with the succeeding species by American authors. C. hirsutum, *Muhl. &c.* is, as Dr. Darlington remarks, hardly distinguishable from the European forms of C. vulgatum. It is exactly the var. glomeratum, *DC.* except that it is more hairy.

3. *C. viscosum* (Linn.): hirsute and rather viscid; leaves lanceolate-oblong, obtusish; cyme rather loosely flowered, with the pedicles longer than the calyx; capsule nearly twice as long as the calyx.—*Eng. bot. t.* 790; *DC. l. c.; Darlingt. l. c. p.* 278. C. vulgatum, *Muhl. cat.* (fide *Darlingt.*) *and others?* C. fulvum, *Raf. in Desv. jour. bot.?*

β. stamens 5.—C. semidecandrum, *Linn.*

γ. peduncles greatly elongated.—C. viscosum, var. elongatum, *Hook. jour. bot. p.* 196.

In fields, &c., Canada! to Louisiana. γ. Louisiana, *Drummond.* Introduced? May–Sept.—♃ Stems spreading. Plant deeper green and less hirsute than the preceding.

* * *Petals longer than the calyx.*

4. *C. alpinum* (Linn.): silky-hirsute; stems decumbent, few-flowered; leaves elliptical-ovate; peduncles more or less elongated; petals bifid at the point, twice the length of the rather obtuse scariously-margined and hairy sepals; capsule nearly twice as long as the calyx.—*Eng. bot. t.* 472; *R. Br. in Ross's voy.; Hook.! app. Parry's* 2*nd voy. p.* 390, *& fl. Bor.-Am.* 1. *p.* 104.

β. *glabratum* (Hook.): leaves and sepals nearly glabrous, *Hook.! l. c.*

γ. *Fischerianum:* hirsute with a more rigid pubescence.—C. Fischerianum, *Ser. in DC. l. c.; Cham. & Schlecht. in Linnæa,* 1. *p.* 60.

Arctic America! from Greenland to Sitcha. γ. Kotzebue's Sound, *Fischer! Beechey!* & Unalaschka.—♃ Plant 2–5 inches high. Flowers large.

5. *C. Beeringianum* (Cham. & Schlecht.): hirsute, viscous above; stems decumbent and leafy at the base; the flowering ones erect, elongated, and few-leaved; leaves oblong, rather acutish; flowers at length nodding; sepals elliptical, acute; petals and capsule half as long again as the calyx. *Cham. & Schlecht. l. c. p.* 62.

Bay of Eschscholtz, *Chamisso;* Kotzebue's Sound, *Fischer!*—♃ Plant 8 inches high, 6–7-flowered.

6. *C. arvense* (Linn.): stems declined at the base, retrorsely pubescent, few-flowered on an elongated peduncle; leaves linear or linear-lanceolate, rather acute; petals obcordate, twice the length of the rather obtuse sepals; capsule oblong, scarcely exceeding the calyx.—*Eng. bot. t.* 93; *DC. prodr.* 1. *p.* 419; *Hook.! fl. Bor.-Am.* 1. *p.* 104. C. Pennsylvanicum, *Hornemann; DC. l. c.* C. tenuifolium, *Pursh! fl.* 1. *p.* 321; *Torr.! fl.* 1. *p.* 460; *Darlingt.! l. c.* C. elongatum, *Pursh! l. c.; Nutt.! in jour. acad. Philad.* 7. *p.* 16.

Rocky places, Canada! to Georgia! and west to the Rocky Mountains! and Oregon! May–July.—♃ Somewhat cæspitose, 2–8 inches high. Leaves 6–14 lines long, longer or shorter than the internodes, obtuse or acute, sometimes fascicled in the axils. Flowers rather large. Degree of pubescence very variable. Capsule finally oblong, equal to or a little shorter than the calyx.—If the capsule in the European C. arvense (of which we have no specimens in fruit) be uniformly twice the length of the calyx, as described by De Candolle, it may be distinct from the American plant: but Hooker (*in fl. Scot.*) describes the capsule as scarcely longer than the calyx.

7. *C. oblongifolium* (Torr.): stems erect or declined, villous; leaves oblong-lanceolate, mostly obtuse; flowers numerous; peduncles viscid; petals obovate, 2-cleft, twice the length of the oblong obtuse sepals; capsule about twice as long as the calyx.—*Torr.! in Sill. jour.* 4. *p.* 63, *& fl.* 1. *p.* 460. C. villosum, "*Muhl. cat. p.* 46"; *Darlingt! fl. Cest. ed.* 2. *p.* 279. C. pubescens, *Goldie, in Edinb. phil. jour.* 4. *p.* 387? C. Pennsylvanicum, *Hook. l. c.*? (excl. syn. C. tenuifol.) C. arvense, *Pursh, fl.* 1. *p.* 231?

Rocky places, Canada! to Pennsylvania! April–June.—♃ Stems 6–12 inches high, stout, very villous, tomentose below and at the nodes. Leaves an inch or more long, sometimes shorter, ovate-lanceolate and obtuse, villous or rather glabrous except the margins. Cyme twice or thrice dichotomous: peduncles villose and viscid. Flowers larger than in C. arvense. Petals cleft nearly ⅓ their length.—Much as this species differs from C. arvense, yet occasionally specimens of the latter nearly approach it in some respects.

8. *C. rigidum* (Ledeb.): hirsute; stem erect, simple below, dichotomous towards the summit; leaves oblong, acute; peduncles elongated; sepals lanceolate, acute; petals bifid, longer than the sepals; capsule oblong, smooth, more than twice the length of the calyx. *DC.*—"*Ledeb. in mem. acad. St. Petersb.* 5. *p.* 538; *DC. prodr.* 1. *p.* 420; *Cham. & Schlecht. l. c. p.* 62.

Unalaschka, *Chamisso.*—Hirsute with spreading hairs, near 2 feet high. *DC.*—Chamisso describes a variety smaller in all its parts.

9. *C. nutans* (Raf.): viscid and pubescent; stems erect, weak, branching from the base, sulcate-striate; internodes finally much longer than the leaves; leaves lanceolate or oblong-lanceolate, the lowermost oblong-spatulate, acute; cyme much elongated, divaricate, many-flowered, with long filiform pedicels; petals oblong, bifid at the apex, exceeding the oblong sepals; capsule cylindrical, incurved, three times the length of the calyx.—*Raf. prec. decouv. p.* 36; *Torr.! fl.* 1. *p.* 459 (excl. syn. C. pubescens); *DC. prodr.* 1. *p.* 420; *Hook. l. c.; Darlingt. fl. Cest. ed.* 2. *p.* 280. C. longipedunculatum, *Muhl. cat. p.* 47. C. glutinosum, *Nutt. gen.* 1. *p.* 291.

Low moist grounds, Hudson's Bay to Louisiana! and west to Oregon.—① Stem 8–10, often 14, inches high, very viscid and arachoid-tomentose when young. Leaves pale green, the earliest small, at length 1–2 inches long.—Variable in size; beginning to flower when not more than 2 or 3 inches high.

‡ *Doubtful species.*

10. *C. bracteatum* (Raf.): pubescent; stem weak, terete; leaves oblong, slightly mucronate; flowers erect, dichotomous, bracteate; bracts ovate, acute; petals about the length of the calyx; capsules nerveless, erect. *Raf. prec. decouv. p.* 36; *DC. prodr.* 1. *p.* 420.

Pennsylvania, *Rafinesque.*

TRIBE II. SILENEÆ. *DC.*

Sepals united into a cylindrical tube. Petals unguiculate, inserted with the stamens upon the stipe of the ovary.

8. SILENE. *Linn.; Otth, in DC. prodr.* 1. *p.* 367.

Calyx tubular, without scales at the base, 5-toothed. Petals 5, with slender claws, which are crowned with scales at the summit; limb 2-cleft. Stamens 10. Styles 3. Capsule 3-celled at the base, opening at the top by 6 teeth.

§ 1. *Cæspitose: stems scarcely any: calyx slightly inflated: peduncles 1-flowered.*—Nanosilene, *Otth.*

1. *S. acaulis* (Linn.): densely cæspitose; leaves linear, ciliate at the base; peduncles short; calyx campanulate; petals (purple) obcordate, crowned; flowers diœcious by abortion.—*Bot. mag. t.* 1081; *Pursh, fl.* 1. *p.* 316; *Hook.! fl. Bor.-Am.* 1. *p.* 87.

Arctic America! to Rocky Mountains, lat. 40°, *Dr. James!* White Hills, New Hampshire, *Mr. Oakes!*—♃ Plant 1–3 inches high.

§ 2. *Flowers solitary or in paniculate cymes: calyx* (except in S. ovata) *vesicular, inflated.*—Behenantha, *Otth.*

2. *S. stellata* (Ait.): stem erect, branching, minutely pubescent; leaves whorled in fours, ovate-lanceolate, gradually acuminate; cymes panicled; petals lacerate-fimbriate, not crowned; stamens about the length of the petals.—*Ait. Kew.* 3. *p.* 84; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 88. Cucubalus stellatus, *Linn.; Michx.! fl.* 1. *p.* 271.

Dry woods, Canada! to S. Carolina and west to Arkansas! June–Aug. —♃ Stem 2–3 feet high. Upper leaves opposite. Petals white.

3. *S. ovata* (Pursh): stem simple, erect, puberulent; leaves opposite, lanceolate-ovate, acuminate; cyme panicled; calyx ovate, not inflated; petals multifid, not crowned; stamens exserted.—*Pursh, fl.* 1. *p.* 316. Cucubalus polypetalus, *Walt. Car. p.* 141?

Western parts of Virginia and Carolina, *Pursh* (ex spec. in herb. Banks). Milledgeville, Georgia, *Dr. Boykin!* Rutherford County, N. Carolina, *Curtis!*—Stems many from the same root, 2–4 feet high, stout. Leaves broad at the base and almost connate, tripli-veined; the lower ones oblong-lanceolate, 4–5 inches long; the upper shorter and more nearly ovate. Calyx small, 10-striate, with very short teeth. Petals white; claws exserted, with the rudiments of a crown; limb about 4-cleft nearly to the base; lobes linear, dichotomous; segments linear. 2-cleft or toothed at the apex. The stamens opposite the petals cohere with the base of the claws, and are protruded later than the others: filaments very long and slender. Ovary oblong, the summit very obtuse. Habit of S. stellata, except that the calyx is not inflated. (Description from specimens and notes communicated by Dr. Boykin.)

4. *S. nivea* (DC.): minutely puberulent; stem simple or dichotomous above; leaves oblong-lanceolate, gradually acuminate, the floral ones lanceolate-ovate and much smaller; flowers subsolitary; calyx tubular-campanulate, the teeth very short and obtuse; limb of the petals cuneiform, 2-cleft, with a minute 2-parted crown; stipe longer than the ovary.—*DC. prodr.* 1. *p.* 377. Silene alba (not, as Nuttall writes, S. nivea), *Muhl. cat. p.* 45, *& herb.! & fl. Lancast. ined.* 1. *p.* 320. Cucubalus niveus, *Nutt.! gen.* 1. *p.* 287; *Torr. fl.* 1. *p.* 449.

β. lancifolia: glabrous; leaves lanceolate, elongated.

On an island in the Susquehannah river near Columbia, Pennsylvania, *Muhlenberg!* (who adds in *fl. Lancast. l. c.:* "Habeo etiam e Harmonia.") In shady moist places, Canton, Illinois, *Mr. Buckley!* June–July.—♃ Stem 1–3 feet high. Leaves 2 (in *β.* often 4) inches long, generally longer than the internodes. Flowers solitary or nearly so at the summit of the stems and branches: pedicels rather short, filiform. Calyx at length membranaceous, somewhat inflated and reticulated, subclavate, a little shorter than the claws of the petals. Petals white; limb not half the length of the claw. Capsule subglobose, raised on the slender stipe.

5. *S. inflata* (Smith): glabrous and glaucous; stem branching; leaves oblong, acute; calyx vesicular, ovate; petals bifid, naked, with cuneiform claws; styles very long.—*DC. prodr.* 1. *p.* 368; *Hook.! fl. Bor.-Am.* 1. *p.* 88. Cucubalus Behen, *Michx.! fl.* 1. *p.* 271; *Torr.! fl.* 1. *p.* 449.

Near Quebec, *Mrs. Percival!* Near Boston, *Bigelow.* Introduced.—♃ Stem a foot or more high. Petals white. Stamens exserted. Styles longer than the stamens.

6. *S. Douglasii* (Hook.): minutely pubescent; stem erect, very slender; leaves remote, linear, elongated and narrow, attenuated at each end; flowers few, on slender peduncles; calyx obovate, at length inflated and membranaceous, abrupt at the base, pubescent; limb of the petals bifid.—*Hook. fl. Bor.-Am.* 1. *p.* 88.

Along the Oregon to the Rocky Mountains, *Douglas, Nuttall!*—♃ Plant 2–3 feet high, simple. Leaves 2–4 inches long, 1–2 lines wide. Calyx obscarcely reticulated according to *Hooker*, not at all so according to *Nuttall.* Petals (white, *Hook.*) pale red (*Nutt.*).—On comparing the description of Hooker with a specimen and notes communicated by Nuttall, no material difference is observable, except in the points in which we have contrasted the one with the other. But it does not appear that Hooker has seen the living plant, and the color might be easily mistaken in dried specimens.

§ 3. *Flowers subracemose-spicate; peduncles opposite.*—Otites, *Otth.*

7. *S. Scouleri* (Hook.): somewhat viscid-pubescent; stem simple, erect, remotely leafy, with swollen nodes; leaves lanceolate or linear-lanceolate, plane; spike long; flowers erect; calyx oblong-clavate, 10-striate; petals bifid. *Hook. fl. Bor.-Am.* 1. *p.* 88.

Oregon, *Douglas, Scouler, & Nuttall!* N. W. Coast, *Menzies*— ① or ② (♃ *Dougl.*) Stem solitary, 1–2 feet high. Petals white or rose-color. Stamens and styles exserted. Near S. viscosa. *Hook.*—Lobes of the petals emarginate. *Nutt. mss.*

§ 4. *Flowers spicate or racemose, axillary, alternate: peduncles not opposite.*—Stachymorpha, *Otth.*

8. *S. quinquevulnera* (Linn.): villous; stem branching; leaves oblong-spatulate, obtuse, the uppermost linear; spike somewhat one-sided; calyx very villous, with short teeth; petals small; lamina roundish, entire; crown bifid.—*Eng. bot. t.* 86; *Michx.! fl.* 1. *p.* 272; *Ell. sk.* 1. *p.* 515; *DC. prodr.* 1. *p.* 372.

Sea-shore, Southern States. California, *Douglas!* Introduced? June–July.— ① Stem 8–12 inches high, clothed with flat jointed hairs. Petals pink or crimson, with the border pale.

9. *S. nocturna* (Linn.): stem branching, hairy below; leaves pubescent, ciliate at the base, the lower ones spatulate, the upper linear-lanceolate; spike one-sided, dense; flowers appressed; calyx cylindrical, almost glabrous, reticulated between the ribs; petals narrow, 2-parted. *DC. l. c.*—*Pursh, fl.* 1. *p.* 316; *Torr. fl.* 1. *p.* 450. S. Nicæensis? *Cham. & Schlecht. l. c.?*

Pennsylvania and Virginia (*Pursh, Schweinitz*). Introduced from Europe.— ① Petals white, greenish beneath.

10. *S. Drummondii* (Hook.): glandular-pubescent and viscid; stems erect, strict, simple; leaves remote, linear-lanceolate; raceme loose, few-flowered, with the pedicels elongated and usually alternate; calyx oblong-cylindrical, erect. *Hook. fl. Bor.-Am.* 1. *p.* 89, & *in bot. Beechey, p.* 135. S. Nicæensis? *Cham. & Schlecht. l. c.*, fide *Hook.*

Oregon and California.— ♃ Stem 1–2 feet high. Flowers 3–5, strict. Petals white, scarcely longer than the calyx. Capsule sessile. *Hook.*

§ 5. *Stems strict: peduncles filiform: calyx campanulate or cylindrical.*—Rupifraga, *Otth.*

11. *S. Antirrhina* (Linn.): glabrous; stem erect, simple or branching above; leaves lanceolate, acute, upper ones linear, the margins minutely ciliate-scabrous; cyme few-flowered; calyx ovate, smooth and shining; petals small, obcordate, slightly crowned.—*Dill. hort. Elth. p.* 422, *t.* 213; *Pursh, fl.* 1. *p.* 316; *Hook.! l. c. p.* 89.

Dry places, Canada! to Georgia, west to Oregon! April–June.— ① Stem slender, 8–30 inches high, puberulent or scabrous at the base, a portion of the upper internodes usually viscid. Peduncles erect. Teeth of the calyx very

Silene Bridgesii
" Engelmanni

short, tinged with purple. Petals white or tinged with purple, inconspicuous. Seeds minutely papillose.

§ 6. *Flowers in somewhat panicled cymes, or solitary: pedicels opposite, short: calyx tubular.*—Siphonomorpha, *Otth.*

12. *S. noctiflora* (Linn.): viscid-pubescent; stem erect, branching; lower leaves spatulate, the upper ones linear; calyx cylindrical-ventricose, the alternate striæ veined; teeth very long, subulate; petals 2-parted.—*DC. prodr.* 1. *p.* 379; *Eng. bot. t.* 291; *Gærtn. fr. t.* 130.

In cultivated places, Northern States! Introduced from Europe.—Flowers rather large, expanding only in the evening or in cloudy weather: petals white or pale rose-color.

13. *S. multicaule* (Nutt.! mss.): "minutely pubescent; stems numerous, erect, rigid; leaves linear-oblanceolate, rather acute; flowers few, on shortish peduncles; calyx ovate-cylindrical, slightly inflated, 10-striate, with obtuse teeth; petals bifid.

"Woods from the west side of the Rocky Mountains to the Pacific.— ♃ Stems about a foot high, not viscid. Root [rhizoma] stout. Upper leaves very small. Flowers in threes, pale red. Calyx subclavate in fruit. Seeds brown, margined with a scaly crest." *Nutt.*

14. *S. Pennsylvanica* (Michx.): viscidly pubescent; stems numerous from the same root; leaves lanceolate, acute, the radical ones spatulate-oblanceolate; cyme several-flowered; petals obovate, very obtuse, erosely crenulate-emarginate—*Michx.! fl.* 1. *p.* 272; *Ell. sk.* 1. *p.* 516; *DC. prodr.* 1. *p.* 380. S. Caroliniana. *Walt. Car. p.* 142? S. Virginica, *Willd. sp.* 2. *p.* 702? S. platypetala, *Otth, in DC. l. c. p.* 383.

Dry rocky places, Canada? to Georgia! and west to Kentucky! April–June.— ♃ Root fusiform. Stems 8–12 inches high, often declined at the base. Leaves generally more or less acute; the radical ones attenuate into petioles. Calyx clavate, at length ventricose above, very viscid. Petals light purple (sometimes rose-color or white, *Ell.*), crowned.

15. *S. Virginica* (Linn.): viscidly pubescent; stem simple; radical leaves spatulate, with ciliate petioles; cauline ones oblong-lanceolate; cyme several-flowered; petals bifid; stamens exserted.—*Linn. syst.* 2. *p.* 311?; *Michx.! fl.* 1. *p.* 272 (in part); *Ell. sk.* 1. *p.* 516; *DC. l. c.* S. Catesbæi, *Walt. Car. p.* 142; *DC. l. c.*

α. stem often declined at the base; radical leaves obtuse or abruptly acute, those of the barren shoots ample, on long petioles; cyme spreading, often with lateral branches from the axils of the upper leaves.

β. smaller; stem erect; leaves mostly obtuse, margins undulate; the base of the radical ones and the lower part of the stem more or less tomentose; peduncles nearly erect.—S. Caroliniana, *Walt. l. c.?*

Upper Canada (*Hooker*) and Ohio! to Georgia! and west to the Mississippi. June–July.— ♃ Root horizontal. Stem 1–2 feet high. Upper leaves very short. Flowers very large. Calyx campanulate-cylindrical, at length rather ventricose. Petals crimson, slightly, or mostly deeply, 2-cleft, the lobes sometimes toothed.—Our two varieties pass into each other insensibly; but the first we receive exclusively from the Western States; the second we have only received from Georgia.

16. *S. rotundifolia* (Nutt.): pubescent; stem weak, decumbent, branching; leaves membranaceous, roundish-oval, abruptly and slightly acuminate; the lower ones obovate, attenuate at the base; flowers subsolitary; petals bifid, with the lobes toothed or incised.—*Nutt.! gen.* 1. *p.* 288; *DC. prodr.* 1. *p.* 283. S. Virginica, var. leaves broadly oval, *Michx. l. c.*

On moist shady rocks, Western States. Kentucky, *Short!* June–Aug.—Pubescent with weak hairs, particularly when young. Leaves 1–3 inches long and 1–2 inches broad, the uppermost suborbicular. Flowers usually solitary on the ends of the branches, very large. Calyx campanulate-cylindrical, at length clavate-ventricose. Petals crowned, deep scarlet; lobes 2-toothed at the extremity, and with a remote subulate tooth.

17. *S. regia* (Sims): puberulent-scabrous, somewhat viscid; stem erect and rigid; leaves ovate or ovate-lanceolate; cyme paniculate, rather strict, many-flowered; petals oblanceolate, usually entire; stamens and styles exserted.—*Sims, in bot. mag. t.* 1724; *Nutt.! gen.* 1. *p.* 288; *DC. l. c.* S. Virginica, var. "panicle coarctate, with the flowers somewhat fascicled," *Michx. l. c.*

Ohio! to Louisiana! Kentucky, *Short!* (Montreal, *Dr. Holmes!* Indigenous?) June–July.— ♃ Stems stout, 4–5 feet high, nodes close below and tumid, often branched above. Flowers very large. Calyx tubular, at length ovoid-cylindrical, long, conspicuously 10-striate. Petals bright scarlet, spatulate-lanceolate, eroded; crown 2-cuspidate.

18. *S. Hookeri* (Nutt. mss.): "subdecumbent, softly pubescent; leaves lanceolate, acute, attenuate below; stems dichotomal; branches about two, with 3 large flowers on long peduncles; calyx cylindric-subcampanulate, with acute teeth; petals divaricately 4-cleft.

"Woods of the Wahlamet, Oregon. The only specimen I have seen was collected by Dr. Gardiner.—♃ Stem about a span long. Leaves rather approximate, obscurely 3-nerved. The first flowers dichotomal [terminating the stem], the last opposite and terminal; in all about 7. Calyx 10-striate. Petals white, more conspicuous than in S. Virginica, about twice the length of the calyx. Habit of S. Baldwinii, but with very different petals." *Nutt.*

19. *S. Baldwinii* (Nutt.): pilose; stem weak; lower leaves obovate or spatulate, obtuse, the upper oval; cyme 3–5-flowered; petals with the limb broadly cuneiform, deeply and divaricately fimbriate.—*Nutt.! gen.* 1. *p.* 288; *DC. l. c.* S. fimbriata, *Baldw. in Ell. sk.* 1. *p.* 515, not of *Sims.*

In rich soil on the banks of Flint River, Georgia, *Baldwin!* Apalachicola, *Dr. Chapman!* April.—♃ Stem erect, 6–12 inches high. Calyx tubular-infundibuliform; teeth oblong, obtuse. Petals very large, pale rose-color.

§ 7. *Stems leafy to the summit: peduncles axillary and terminal, 1-flowered.* Hook.

20. *S. Menziesii* (Hook.): minutely glandular-pubescent; stem erect, dichotomously branched; leaves crowded, ovate-lanceolate, the lowermost oblong-ovate, acuminate at both ends; flowers numerous; peduncles about the length of the leaves; limb of the 2-parted petals with the segments linear, much longer than the obovate deeply 5-toothed calyx; styles thickened above, conspicuously bearded within.—*Hook. fl. Bor.-Am.* 1. *p.* 99. *t.* 30.

N. W. America, from Oregon (*Nuttall!*) to Slave Lake (*Richardson*). Stem 6–12 inches high. Flowers the size of S. quadridentata. Petals not crowned. Somewhat of the habit of Saponaria ocymoides. *Hook.*

21. *S. stellarioides* (Nutt.! mss.): "minutely pubescent; stem erect, scarcely branched; flowers few; leaves lanceolate-oblong, acuminate; peduncles longer than the leaves; petals bifid, longer than the obovate deeply 5-toothed calyx; styles slender and smooth.

"Woods, from Oregon to the western slope of the Rocky Mountains, nearly to the Fort of Wallawallah.—Stem 3–6 inches high. Peduncles 1½ to 2 inches long, mostly alternate. Flowers few and white, very similar to those of Stellaria. Petals not crowned.—Closely allied to S. Menziesii, but a much smaller plant, not diffusely branched, the flowers twice as large, and the stigmas smooth." *Nutt.*—The left figure of *t.* 30. *Hook. fl. l. c.* represents this species pretty well.

§ 8. *Cymes corymbose: calyx clavate, elongated,* 10-*striate.*—Atocion, *Otth.*

22. *S. Armeria* (Linn.): glabrous and slightly glaucous; stem branching, glutinous below each node; leaves ovate-lanceolate; petals obcordate, crowned.—*Eng. bot. t.* 1398; *DC. prodr.* 1. *p.* 383; *Hook. l. c.*

Upper Canada, *Hooker;* Michigan! Massachusetts! Introduced from Europe. June–July.—Calyx and petals purplish.

[illegible]

‡ *Doubtful species.*

23. *S. axillaris* (Leavenworth): viscous-pubescent; stem branching; leaves oval, somewhat toothed, petioled; flowers sessile, solitary, axillary. *Leavenworth, in Sill. jour.* 7. *p.* 62.

Prairies of Greene County, Alabama. Aug.—Habit of Cuphæa. Stem 8 inches high. Leaves ovate, acute at the base. Flowers purple. *Leavenworth.*—Probably not a Caryophyllaceous plant.

9. LYCHNIS. *DC. fl. Fran., & prodr.* 1. *p.* 385.

Lychnis & Agrostema, *Linn.*

Calyx tubular, 5-toothed, without scales at the base. Petals 5, with slender claws, mostly crowned. Stamens 10. Styles 5. Capsule 1-celled or 5-celled at the base.

§ 1. *Calyx ovoid, with short teeth: stipe of the ovary very short or none.* —AGROSTEMA, DC.

1. *L. apetala* (Linn.): pubescent; stem simple; calyx rather cylindrical, striate, finally inflated and including the petals; seeds arilled. *Hook.! fl. Bor.-Am.* 1. *p.* 91.

α. stem short, about 1-flowered. *Hook. l. c.*—L. apetala, *DC. prodr.* 1. *p.* 386.

β. stem 3–6-flowered, elongated. *Hook. l. c.*—L. apetala, β. pauciflora, *DC. l. c.* L. pauciflora, *Fischer.*

Arctic America!—Plant 3–12 inches high. Leaves linear, the lower ones spatulate. Petals red.—Several varieties are noticed by Chamisso & Schlechtendahl in *Linnæa, l. c.*

2. *L. alpina* (Linn.): glabrous; stems cæspitose, strict; cymes capitate; calyx campanulate; petals bifid; leaves linear-lanceolate, acute.—*Pursh, fl.* 1. *p.* 321; *Fl. Dan. t.* 65; *DC. l. c.; Hook. l. c.*

Labrador! (*Pursh, &c.*—v. s. in herb. *Schweinitz.*)

§ 2. *Calyx cylindrical-campanulate, coriaceous; teeth very long: stipe none.*—GITHAGO, DC.

3. *L. Githago* (Lam.): hirsute; stem dichotomous; flowers on long peduncles; leaves linear.—*DC. prodr.* 1. *p.* 387. Agrostema Githago, *Linn.*

In cultivated fields. June–July. Introduced from Europe.—① Petals purple, not crowned; limb obcordate. *Corn-Cockle.*

10. SAPONARIA. *Linn.; DC. prodr.* 1. *p.* 365.

Calyx tubular, 5-toothed, without scales at the base. Petals 5; claws as long as the calyx. Stamens 10. Styles 2. Capsule 1-celled.

1. *S. officinalis* (Linn.): fascicles panicled; calyx cylindrical; crown of the petals linear; leaves oval or oval-lanceolate.—*Pursh, fl.* 1. *p.* 314; *DC. prodr. l. c.*
In waste places, New-York! to Georgia. July–Aug. Introduced.—♃ Flowers large: petals often doubled, rose-color.

2. *S. Vaccaria* (Linn.): flowers in paniculate cymes; calyx pyramidal, 5-angled, glabrous; bracts membranaceous, acute; leaves ovate-lanceolate, sessile.—*Gærtn. fr. t.* 130; *DC. prodr.* 1. *p.* 365. Gypsophila Vaccaria, *Smith.*
In cultivated places; hardly naturalized. July–Aug.—① Petals pale red.

11. DIANTHUS. *Linn.; DC. prodr.* 1. *p.* 355.

Calyx tubular, 5-toothed, with 2–4 opposite imbricate scales at the base. Petals 5, with long claws. Stamens 10. Styles 2. Capsule 1-celled. Embryo slightly curved.

1. *D. repens* (Willd.): stem 1-flowered; calycine scales 2, ovate-lanceolate, acuminate, a little shorter than the calyx; petals toothed; leaves linear, glabrous. *Hook.*—*Willd. sp.* 2. *p.* 681; *DC. prodr.* 1. *p.* 358; *Cham. & Schlecht. in Linnæa,* 1. *p.* 37; *Hook. fl. Bor.-Am.* 1. *p.* 87.
N. W. Coast; also a native of Siberia.—The specific name is not well chosen, as the root is perpendicular, not creeping. *Cham. & Schlecht.*

2. *D. Armeria* (Linn.): flowers fascicled; calycine scales lanceolate-subulate, about the length of the tube; leaves linear-subulate, hirsute.—*Eng. bot. t.* 317; *Pursh, fl.* 1. *p.* 314; *DC. l. c.* D. armerioides, *Raf. in Desv. jour. bot.* [illegible]. *p.* [illegible]69.
In fields and pine woods, Massachusetts! to Maryland. July. Introduced.—① Stem a foot high. Lower leaves spatulate-lanceolate. Flowers inodorous: petals red, with white dots, crenate.

3. *D. Caroliniana* (Walt.): flowers aggregated, on long peduncles; calycine scales half as long as the tube. *Walt. Car. p.* 140.
South Carolina, *Walter.*—D. prolifer was some time since cultivated at Bartram's garden under this name.

ORDER XXV. PORTULACACEÆ. *Juss.*

Sepals 2 (rarely 3), mostly united at the base, free or (in some Portulacas) cohering with the base of the ovary. Petals 5, or very rarely 3, 4, or 6, imbricated in æstivation. Stamens variable in number, opposite the petals when of the same number, inserted with the petals into the base of the calyx, or hypogynous: filaments all fertile, distinct: anthers fixed by the middle, versatile or introrse. Ovary 1-celled by the obliteration of the dissepiments: styles 2–6, usually more or less combined, stigmatose along the inner surface. Capsule 1-celled, dehiscing transversely (a pyxidium), or loculicidal with as

many valves as stigmas: placenta in the axis. Seeds numerous or few, campulitropous. Embryo curved around the outside of mealy albumen.—Succulent insipid plants. Leaves alternate or opposite, entire, exstipulate. Flowers axillary or terminal, mostly ephemeral.

Excluding from the order Trianthema (which should certainly be placed with Sesuvium, as Arnott suggests), Cypselea (probably a co-ordinate with Sesuvium), and Ginginsia (which is referred to Illecebraceæ by Bartling, &c.), no exceptions remain to the character of Portulacaceæ as given above. Hydropyxis, *Raf.* may be left out of the question, as it was founded on a plant which the author never saw. Leptrina, of the same author, is a wholly doubtful plant; perhaps Montia.

1. PORTULACA. *Tourn.; DC. prodr.* 3. *p.* 353.

Sepals 2, united below, sometimes cohering with the base of the ovary; the upper portion at length deciduous, separating from the lower near the base by a transverse line. Petals 4–6, inserted on the calyx, equal. Stamens 8–20. Style 3–6-cleft at the apex or parted. Capsule subglobose, dehiscing transversely near the middle. Seeds numerous, on filiform funiculi.—Humble fleshy herbs. Leaves scattered, often whorled near the flowers, frequently with a tuft of hairs in their axils. Flowers expanding only in sunshine.

1. *P. oleracea* (Linn.); diffuse; leaves cuneiform, the axils and nodes naked; flowers sessile; petals 5, coherent at the base; stamens 10–12; styles distinct nearly to the base.—*DC. pl. gras. t.* 123, *& prodr. l. c.; Ell. sk.* 1. *p.* 534.
Cultivated and waste places, nearly throughout N. America; introduced: indigenous on the saline plains of the Missouri, according to *Nuttall & Dr. James!*— ① Flowers pale yellow.—*Purslane.*

2. *P. pilosa* (Linn.): low, diffuse; leaves lanceolate or linear, obtuse, with tufts of long hairs in their axils; flowers crowded and sessile at the summit of the branches in a dense tuft of hairs; petals 5 (purple), coherent at the base; stamens about 20.—*Gærtn. fr. t.* 128; *Bot. reg. t.* 792; *DC. l. c.; Torr.! in ann. lyc. New-York*, 2. *p.* 202.
In barren places, N. Carolina? (ex *herb. Schweinitz!*) On dry rocks, Arkansas &c., *Nuttall! Dr. James! Dr. Leavenworth!* Texas, *Drummond!*— ① A native also of Mexico and South America.

2. TALINUM. *Adans.* (in part.); *Sims, bot. mag. t.* 1357.

Sepals 2, ovate, concave, deciduous. Petals 5, sessile, hypogynous. Stamens 10–20, inserted with the petals, and often coherent with them at the base. Style trifid. Capsule subglobose, 3-valved, many-seeded.

§ *Stigmas or lobes of the style short, connivent. Perennial herbs, with a short thick and firm stem, and terete subulate fleshy leaves: flowers in a terminal dichotomous cyme, expanding for a single day.*—PHEMERANTHUS, Raf.

1. *T. teretifolium* (Pursh): stem simple or branched; leaves crowded at the summit of the short branches; peduncle elongated; petals purple; sta-

mens about 20.—*Pursh! fl.* 2. *p.* 365; *Nutt.! gen.* 2. *p.* 6; *Darlingt.! fl. Cest. ed.* 1. *t.* 3, *ed.* 2. *p.* 365. Phemeranthus teretifolius, *Raf. speech.* 1. *p.* 86.

On naked rocks, Westchester, Pennsylvania, *Darlington!* Virginia, *Pursh!* N. Carolina, *Schweinitz!* West to the falls of the St. Croix, *Dr. Houghton!* Arkansas, *Dr. Pitcher! Nuttall! Dr. James!* Texas, *Drummond!* June–Aug.—Perennial stems 1–3 inches long, throwing out fibrous roots: annual stems about the same length. Peduncles 5–8 inches high. Bracts ovate-lanceolate, very small, produced at the base. The valves of the capsule on falling away leave a kind of replum in the form of 3 minute bristles. Placenta roundish, raised on a stipe.

2. *T. parviflorum* (Nutt.! mss.): "small; leaves slender; stamens 5?–10."

On rocks, Arkansas; with the preceding species, *Nuttall!*—A distinct species, according to Nuttall, with much smaller flowers than T. teretifolium.

3. CALANDRINIA. *H. B. & K. nov. gen.* 6. *p.* 77, *& syn.* 3. *p.* 376.

Sepals 2, persistent, ovate, obtuse or acute, united at the base. Petals 3–5, hypogynous, equal, rarely connate at the base, sessile. Stamens 4–15, hypogynous, sometimes coherent with the base of the petals, with which, when of the same number, they are often alternate. Style short: stigmas 3, thickish, short. Capsule oblong or elliptical, 3-valved, many-seeded. Seeds turgid, smooth and shining.—More or less succulent glabrous herbs. Leaves alternate. Flowers axillary and solitary along the upper part of the stem, or subracemose.

This genus is intermediate between Talinum and Claytonia.

1. *C. Menziesii* (Hook.): caulescent; leaves linear-spatulate; the lower ones on long peduncles, with the margins naked; the upper ones glandulose-ciliate; sepals acutely carinate, glandulose-ciliate on the margins and keel; flowers peduncled, axillary. *Hook.*—Talinum? (Calandrinia?) Menziesii, *Hook. fl. Bor.-Am.* 1. *p.* 223, *t.* 70.

On the coast, south of the mouth of the Oregon, *Menzies* ex *Hook.*, whose specimens were in fruit only: a small plant; stems 2–4 inches high.—Mr. Nuttall has brought specimens, also in fruit, from St. Barbara, California, which agree perfectly with Hooker's figure, except that the upper leaves and sepals are very sparingly ciliate with minute processes of the cuticle rather than hairs, which are moreover not glandular. We have the same plant from Douglas's Californian collection in flower, with the margins of the leaves almost wholly naked. The petals are rose-color or purple, rather longer than the sepals; the stamens 6–8, and the seeds numerous.

2. *C. speciosa* (Lindl.): glabrous, diffuse; leaves spatulate, acute, attenuate into a petiole; flowers racemed; peduncles shorter than the bracts; petals longer than the calyx. *Lindl. in bot. reg. t.* 1598.

N. California, *Douglas.* (v. s. cult.)— ① Stems 4–5 inches high, cæspitose. Leaves fleshy. Raceme leafy: pedicels clavate. Sepals ovate, acute, carinate. Petals (large) deep purple. Stamens 9–10. *Lindl.*

3. *C. maritima* (Nutt.! mss.): "glaucous; leaves all in a radical cluster, obovate-spatulate, thick and fleshy, somewhat petioled; obtuse; stems scapiform, diffuse; flowers in a subcorymbose raceme; pedicels longer than the bracts; petals longer than the broadly ovate acute sepals."

St. Diego, California, on the sea coast, *Nuttall!* May.—Flowers rather large and showy, red. *Nutt.*

4. CALYPTRIDIUM. *Nutt. mss.*

" Sepals 2, ovate, persistent. Petals united into a minute diaphanous conical corolla, slightly 3-toothed at the apex, soon detached from the base and carried up on the summit of the elongated capsule. Stamen 1. Styles 2, minute. Capsule oblong-linear, many times longer than the calyx, 2-valved !, 6–10-seeded. Seeds (circinate, compressed,) on filiform funiculi of unequal length, rising from the base of the cell.—An annual succulent plant with the habit of Calandrinia, much branched, depressed, with alternate spatulate leaves. Spikes axillary, numerous, often several from the same point: flowers small, somewhat secund."

C. monandrum (Nutt.! mss.)—(Talinum monandrum, *Ruiz & Pav. prodr. p.* 65 ? Calandrinia monandra, *DC. prodr.* 3. *p.* 359 ?)

" St. Diego, California.—Depressed, densely branched, glabrous. Radical leaves lanceolate-spatulate, obtuse, thick and succulent, in a rosulate cluster. Sepals slightly unequal, with scarious margins. Corolla minute, pale-reddish. Capsule about ¼ of an inch long, compressed, pod-shaped, somewhat recurved ; valves membranaceous. Seeds placed at different heights in the capsule in consequence of the inequality of the funiculi, black and shining.—Talinum monandrum, if not our plant, as is most probable, is doubtless a congener. The calyptriform corolla and dicarpellary fruit, which characterize this genus, are curious anomalies in the order Portulacaceæ."—*Nutt.*

5. CLAYTONIA. *Linn. ; Gærtn. fr. t.* 129.

Sepals 2, persistent, distinct or united at the base, ovate, mostly obtuse. Petals 5, hypogynous, obcordate, obovate, or oblong, emarginate or bifid, sometimes entire, equal, unguiculate ; the claws more or less connate at the base. Stamens 5, inserted on the claws of the petals. Styles 3-cleft, the divisions slender, stigmatose within. Capsule 3-valved, 2–5-seeded. Seeds turgid, smooth or punctate, shining.—Glabrous rather succulent herbs. Stems simple, with a pair of opposite often connate leaves (or with several alternate ones) ; radical leaves long-petioled. Racemes often one-sided. Flowers rose-color or white.

§ 1. *Perennial: stems simple, arising from a subterranean cormus (or rhizoma) : cauline leaves* 2, *opposite, distinct : raceme terminal, rarely geminate.*—CLAYTONIA proper.

1. *C. Virginica* (Linn.) : leaves all linear or linear-lanceolate, elongated and attenuated into petioles below ; radical ones very few ; raceme at length elongated ; pedicels slender, nodding ; petals mostly emarginate.—*Bot. mag. t.* 941 ; *Michx.! fl.* 1. *p.* 160 ; *Ell. sk.* 1. *p.* 306 ; *Hook. fl. Bor.-Am.* 1. *p.* 224 (*α.*) ; *DC. prodr.* 3. *p.* 361 (*α.* & *β.*) ; *Sweet, Brit. fl. gard,* (*ser.* 2.) *t.* 163. C. grandiflora, *Sweet, l. c. t.* 216, fide *Hook.*

α. acutiflora : petals elliptical, acute [mostly with a slight emargination] ; sepals rather acute ; leaves elongated, narrowly linear. *DC. l. c.*

β. media : petals obovate, obtuse [emarginate] ; sepals obtuse ; leaves oblong-linear or lanceolate. *DC. l. c.*

In low moist grounds, Canada ! (rare) to Florida ! Louisiana ! and Arkansas ! most abundant in the Middle and Southern Atlantic states. March–May.—Cormus farinaceous, deep in the ground. Leaves acutish. Flowers

5–15; the lowest and often nearly all the pedicels minutely bracteate. Petals pale rose-color or red, with deeper-colored veins.—Variable in many respects, but apparently distinct from the succeeding species.

2. *C. Caroliniana* (Michx.): leaves ovate-lanceolate or oval, subspatulate at the base, or abruptly decurrent into a petiole; radical ones very few, spatulate; pedicels slender, nodding; sepals and petals very obtuse.—*Michx. fl.* 1. *p.* 160; *Ell. sk. l. c.* C. spathulæfolia, *Salisb. parad. Lond. t.* 71; *Pursh, fl.* 1. *p.* 174; *Nutt.! gen.* 1. *p.* 152. C. Virginica *β.* latifolia, *Torr.! fl.* 1. *p.* 259. C. Virginica *γ.* spathulæfolia, *DC. l. c.; Hook. l. c.*

In woods from the mountainous parts of N. Carolina and the Western States! to the northern parts of Canada! and New-Brunswick; west to the Rocky Mountains (*Hooker*): abundant in somewhat mountainous situations throughout the Northern States. April.—A smaller plant than C. Virginica. Leaves from 1 inch or less to 2 inches long, variable in shape; particularly the cauline leaves, which are sometimes exactly oval, with a distinct petiole half an inch long, sometimes nearly spatulate.—The name given by Michaux is inappropriate, as the plant has a more northerly range than C. Virginica, and is rare in the Southern States.

3. *C. lanceolata* (Pursh): root tuberous; radical leaves (very few) oblong, on long petioles; cauline ones elliptical, sessile, 3-nerved, with anastomosing veins; raceme solitary, nodding; pedicels elongated, the lowest bracteate; petals deeply emarginate. *Hook.—Pursh, fl.* 1. *p.* 175. *t.* 3; *Hook.! fl. Bor.-Am. l. c.*

In the Rocky Mountains, *Lewis* ex *Pursh; Drummond* ex *Hook.*—We quote the character of this species from Hooker; whose specimens, smaller than the plant figured by Pursh and with broader slightly notched petals, are very similar, as Hooker himself remarks, to the preceding species, differing indeed chiefly in the sessile cauline leaves. We have the same plant, or a form intermediate between it and C. Caroliniana, from Dr. Pitcher, collected probably in Arkansas. The following is the character given by Pursh: "C. foliis lanceolatis: caulinis ovatis sessilibus, racemeo solitario elongato, calycis foliolis brevibus obtusissimis, petalis cuneatis bifidis, radice tuberosa.—Flowers white, nearly the size of *C. Virginica*, without veins."—We cannot help suspecting that Pursh's figure is made up of two species, and that the flowers at least belong to C. alsinoides.

§ 2. *Annual: roots fibrous: stems simple, with a single pair of opposite often connate or perfoliate leaves: raceme terminal, often geminate or compound.*—LIMNIA.

4. *C. alsinoides* (Sims): stems numerous from a slender root; leaves reticulately veined, rhombic-ovate; radical ones numerous, on long petioles, abruptly acuminate; cauline sessile; racemes solitary or in pairs; pedicels filiform, mostly solitary, bracteate; petals cuneiform (white), acutely bifid at the apex.—*Sims, bot. mag. t.* 1309; *Pursh, fl. l. c.; DC. prodr.* 3. *p.* 361; *Hook. l. c.; Bong.! veg. Sitcha, in mem. acad. St. Petersb.* (6. *ser.*) 2. *p.* 136. C. Unalaschkensis, *Fisch. in Rœm. & Schult. syst.* 5. *p.* 434; *DC. l. c.?* Limnia alsinoides, *Haw. succ. syn. p.* 12.

β. rosea: flowers rose-color; leaves almost veinless. *DC. l. c.*—C. Sibirica, *Bot. mag. t.* 2243, ex *Hook.*, not of *Linn?*

γ. heterophylla: radical leaves some of them ovate, others lanceolate; cauline oblong-lanceolate, attenuate at the base; racemes 1–3; flowers pale rose-color.—C. Unalaschkensis *β.* heterophylla, *Nutt.! mss.*

Oregon, *Menzies, Nuttall!* to Sitcha, *Bongard!* May–June.—Flowers rather small (in all our indigenous specimens larger than in cultivated specimens from the Liverpool garden). Stems slender, 12–18 inches high. Raceme at length elongated.

5. *C. asarifolia* (Bongard): cæspitose; leaves veiny, the radical ones on long petioles, somewhat reniform; cauline sessile, broadly ovate, obtuse; pedicels solitary or ternate, bracteate; petals 2-cleft, red. *Bong. veg. Sitcha, l. c. p.* 136.

Sitcha.—Radical leaves nearly 4 inches broad: cauline ones about an inch broad. Petals twice the length of the calyx; lobes obtuse. *Bongard.*—Nearly allied, apparently, to the foregoing.

6. *C. perfoliata* (Donn): cæspitose; leaves obscurely reticulately veined; radical ones numerous, on slender petioles, broadly rhomboidal; cauline pair united into a single nearly orbicular perfoliate leaf; raceme fascicled, sessile; petals entire or slightly emarginate.—*Donn, hort. Cantab. ed.* 4. *p.* 50; *Bot. mag. t.* 1336; *Pursh, fl.* 1. *p.* 176; *Hook. fl. Bor.-Am.* 1. *p.* 225. C. Cubensis, *Bonpl. in ann. mus.* 7. *p.* 82. *t.* 6, *& pl. æquinoct. t.* 26. Limnia perfoliata, *Haw. succ. syn. p.* 12.

N. W. America, (*Menzies, Nuttall!*) to Mexico and Cuba. Vallies of the Rocky Mountains, *Douglas, Nuttall!*—Stems 4–8 inches high, diffuse. Flowers very small for the size of the plant: petals white.—De Candolle gives as a locality, the *Rocky Mountains of Virginia!*

7. *C. parviflora* (Douglas): radical leaves numerous, linear-spatulate, 3-nerved, with anastomosing veins, on long petioles; the cauline pair united into one oval perfoliate veiny leaf; raceme [mostly peduncled] simple or somewhat compound, with a single bract. *Hook. l. c. p.* 225, *t.* 73.

β. *glauca* (Nutt.! mss.): smaller; raceme mostly subsessile.

In woods along the Oregon river, *Douglas, Nuttall!*—Commonly 6–12 inches high, pale green. Petals nearly entire, oblong, pale rose-color or white, twice the length of the calyx. Var. β. grows on exposed rocks, in close tufts, is often very glaucous, 1–3 inches high. *Nutt.*—The cauline leaf in both forms of Mr. Nuttall's specimens is often very excentrically perfoliate.

8. *C. spathulata* (Douglas): cæspitose, minute; radical leaves numerous, narrowly subspatulate-linear; cauline ones ovate, acute, sessile; raceme solitary (4–6-flowered), 1-bracteate; petals entire, scarcely exceeeing the calyx. *Hook. fl. Bor.-Am.* 1. *p.* 226. *t.* 74.

N. W. Coast, *Menzies.* Valleys of the Rocky Mountains, *Douglas.*—Leaves very narrow, scarcely an inch long; the cauline pair very small. The smallest of the genus [1–2 inches high]. *Hook.*

9. *C. exigua:* cæspitose; radical leaves numerous, narrowly linear; cauline pair lanceolate or linear, somewhat dilated at the base, subconnate, usually as long as the solitary few and loosely-flowered raceme; petals obcordate-oblong, more than twice the length of the calyx.

California, *Douglas!*—Stems 2 inches high. Cauline leaves variable in shape and length, (sometimes unequal) often longer, but not rarely shorter than the raceme. Raceme peduncled, 5–9-flowered. Flowers larger than in C. spathulata. Seeds minutely scrobiculate.

10. *C. gypsophiloides* (Fisch. & Meyer): glaucous; radical leaves very long, filiform; cauline pair mostly connate on one side; raceme simple, ebracteate; petals nearly linear, emarginate, thrice the length of the calyx. *Fisch. & Meyer, ind. sem. St. Petersb.* (*Dec.* 1835) *p.* 33; *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 375.

California, at the Russian settlement Ross, *Fisch. & Meyer.*—Stems numerous and cæspitose, filiform, 6–10 inches high. Radical leaves 3–6 inches or more in length, fleshy, erect: the cauline of two combined on one side, broad, cucullate, almost tubular at the base; the apices free, ovate, acute, unequal, spreading. Racemes pedunculate, elongated, many-flowered: pedicels scattered, nearly an inch long. Flowers small, but rather showy. Petals pink, cuneate-oblong, deeply notched. *Fisch. & Meyer*, and *Don*, *l. c.*—The founders of this species compare the flowers with those of Gypsophila acutifolia or G. perfoliata.

11. *C. tenuifolia:* stems numerous, filiform; leaves narrowly linear; the radical ones insensibly decurrent into long petioles; cauline pair sessile, slightly connate on one side at the base, much longer than the sessile 1-bracteate subumbellate raceme; petals oblong, longer than the calyx.

California, *Douglas!*—Stems 6 inches high. Leaves about a line wide (radical ones as long as the stems), acute. Raceme compound. Flowers smaller than those of C. perfoliata.

§ 3. *Annual: stems decumbent, stoloniferous, with numerous opposite (or verticillate?) leaves, proliferous: (and hence) racemes apparently axillary.*—ALSINASTRUM.

12. *C. aquatica* (Nutt.! mss.): "cæspitose, decumbent, stoloniferous; leaves opposite, spatulate or oblong-obovate, attenuate below, obtusish; racemes axillary, peduncled, simple, few-flowered; petals obovate, entire, more than twice the length of the calyx.

"In small springs, &c. Rocky Mountains, and on the plains of the Oregon near its confluence with the Wahlamet.—Stems spreading and rooting at the joints. Leaves 1–2 inches long, attenuated into a short petiole, slightly veined. Racemes 5–8-flowered, with a single bract at the origin of the lowest pedicel. Flowers rather large, white." *Nutt.*—C. stolonifera, *C. A. Meyer*, from Unalaschka (the description of which we are now unable to find or to refer to) is perhaps this species. It is evidently nearly allied to C. flagellaris, *Bongard.*

13. *C. flagellaris* (Bongard): stems cæspitose, flagelliform, here and there producing fascicles of leaves and rootlets; leaves oval, attenuate into a short petiole, veiny; petals more than thrice the length of the calyx, bifid, the lobes obtuse. *Bong. veg. Sitcha, l. c. p.* 136.

Sitcha.—Stems decumbent. Leaves cæspitose, broadly oval (the limb about ½ an inch in length and width), the younger ones oblong. Flowers racemose, white. *Bongard.*

§ 4. *Annual; roots fibrous: stems branched: leaves several, alternate: racemes terminal and often axillary or opposite the leaves.*—NAIOCRENE.

14. *C. parvifolia* (Moçino): stems branching from the base, filiform, ascending; leaves succulent; the radical ones rosulate, obovate-spatulate, acute; the cauline linear-spatulate; racemes terminal, few-flowered; pedicels filiform, bracteate; petals oblong, entire (or acutely bifid at the point?), thrice the length of the calyx.—"*Moç. icon. pl. Nootk. ined.*"; *DC. prodr.* 3. *p.* 361. C. filicaulis, *Hook. fl. Bor.-Am.* 1. *p.* 224, *t.* 72.

On shady moist rocks along streams, Nootka, *Menzies*, *Moçino.* Oregon, near the ocean, *Douglas*, *Dr. Scouler*, ex *Hook.*; and at the confluence of the Wahlamet, *Nuttall!* Aug.—Stems 5–6 inches long. Leaves pale green (as succulent as in many species of Sedum, *Nutt.*), nearly veinless; the radical ones attenuate into a very short petiole; the cauline very small; the uppermost minute and bract-like. Racemes 3–7-flowered: pedicels much longer than the bracts. Flowers rather large, rose-color.—Moçino's plant is said to have the petals acutely bifid at the apex; but as described by Hooker, and in Nuttall's specimens, the petals are entire; but there seems to be no other difference.

15. *C. linearis* (Douglas): stems branching; leaves very narrowly linear, obtuse [sheathing at the base, *Nutt.*]; racemes terminal, one-sided, the lowest pedicel bracteate; petals entire, longer than the calyx. *Hook. fl. Bor.-Am.* 1. *p.* 224, *t.* 71.

In springy places and on moist rocks along the Oregon, *Douglas, Nuttall!* —Stems weak, 4–6 inches high. Leaves 2–3 inches long, the uppermost shorter, rather succulent, minutely 3-nerved under a lens. Racemes (and pedicels) somewhat nodding, 4–8-flowered: pedicels thrice or more the length of the flower. Flowers rather large: petals obovate, entire. Seeds smooth and shining, flat, with a carinate margin.

16. *C. dichotoma* (Nutt.! mss.): "low, almost cæspitose, much branched; leaves very narrowly linear, acute, sheathing at the base; racemes terminal and axillary; flowers (rather crowded) 1-sided, nodding; pedicels about the length of the flowers, the lowest one bracteate; petals emarginate, scarcely longer than the calyx.

"In wet places on rocks, near the junction of the Wahlamet with the Oregon.—Very nearly related to C. linearis, but much smaller in all its parts (about 1½ inch high) and densely branched. The flowers and seeds are about ½ the size of those of C. linearis." *Nutt.*

17. *C. diffusa* (Nutt.! mss.): "stems diffusely dichotomous and procumbent; leaves veiny, broadly ovate or deltoid, abruptly attenuate into a petiole, acute; racemes very numerous, terminal and lateral, subcorymbose, 5–9-flowered; pedicels slender, at length recurved, the lowest one bracteate; petals emarginate, a little longer than the calyx.

"In pine woods, a few miles above Fort Vancouver.—A very remarkable species, with much the habit and appearance of Stellaria media, except that the leaves are alternate. The stem is many times dichotomous and spreading widely over the ground. Radical leaves on long petioles; those of the upper leaves somewhat margined and about the length of the limb. Pedicels several times longer than the flowers, sometimes geminate; the lowermost longest. Flowers rather small: petals pale rose-color. Seeds flat, very minutely and regularly rugose-puncticulate, with obtuse margins." *Nutt.*

6. MONTIA. *Linn.; Lam. ill. t.* 50; *Gærtn. fr. t.* 129.

Sepals 2, rarely 3, persistent, suborbicular. Petals 5, hypogynous, unguiculate, with the claws a little connate; 3 of them somewhat smaller. Stamens 3, inserted on the claws of the smaller petals, very rarely 4 or 5. Styles very short, almost separate, spreading. Capsule 3-valved, 3-seeded. Seeds turgid, minutely tuberculate, large.—A very small glabrous procumbent rather fleshy herb, growing in water or wet places; common in Europe; rare in North and South America. Leaves opposite, spatulate. Raceme few-flowered, terminal.

M. fontana (Linn.)—*Willd. sp.* 1. *p.* 487; *DC. prodr.* 3. *p.* 362; *Kunth, syn. pl. æquinoct.* 3. *p.* 377.

α. minor: stems assurgent; leaves somewhat connate.—*DC. l. c.; Bong. veg. Sitcha, l. c. p.* 136.

β. major: stems weak, creeping; leaves sessile; flowers much smaller.—*DC. l. c.; Bong. l. c.* M. rivularis, *Gmelin.*

Oregon, *Nuttall!* Sitcha, *Bongard!* Labrador, *Gmelin.*

ORDER XXVI. ELATINACEÆ. *Cambessèdes.*

Sepals 2–5, mostly distinct, persistent. Petals hypogynous, as many as the sepals and alternate with them. Stamens hypogynous, as many or twice as many as the petals: anthers fixed by the middle, introrse. Ovary 2–5-celled: styles 2–5, distinct or united at the base, or none: stigmas capitate. Capsule 2–5-celled, 2–5-valved: (dehiscence septicidal, *Camb.*, *Lindl.*; loculicidal, ex *Arn.*), many-seeded, crowned with the persistent styles or stigmas: placentæ in the axis. Seeds anatropous, cylindrical, slightly curved or straight, with little or no albumen. Embryo cylindrical: cotyledons short.—Annual marsh plants, with fistulous rooting stems, opposite entire or serrate leaves, and very small axillary or solitary flowers. Stipules small and inconspicuous, sometimes wanting.

For information concerning this small family, vid. *Camb. in Mém. du Muséum,* 18. *p.* 225, *& in A. St. Hil. fl. Bras.* 2. *p.* 159; *Arnott, in Edinb. jour. nat. & geogr. science,* 1. *p.* 430; *Fischer & Meyer, in jour. acad. imp. des naturalistes, Moscou, & in Linnæa,* 10. *p.* 69. Bartling unites the family with Lythraceæ, with which, indeed, it possesses many points of resemblance.

1. ELATINE. *Linn.*; *Gærtn. fr. t.* 112; *Arnott, l. c.*

Styles distinct, very short, or none.—The rest as in the character of the Order. *Arn.*

1. *E. Americana* (Arn. l. c.): diffuse, procumbent, rooting from the joints; branches assurgent; leaves cuneate-obovate, obtuse; flowers sessile, minute; sepals, petals, stamens, and sessile stigmas 2, sometimes 3.—Peplis Americana, *Pursh, fl.* 1. *p.* 238. Crypta minima, *Nutt.! in jour. acad. Philad.* 1. *p.* 117. *t.* 6. *f.* 1; *Torr.! fl.* 1. *p.* 32. Elatine minima, *Fisch. & Meyer, l. c. p.* 25.
Margins of ponds and streams, Connecticut! and New-York! to Maryland! west to Missouri! Probably extending throughout the United States. July–Sept.—Branches ½–2 inches long. Seeds slightly curved, minutely rugose transversely.—Very nearly allied to E. triandra, of Europe.

ORDER XXVII. LINACEÆ. *DC.*

Sepals 5 (sometimes 3 or 4), distinct or united at the base, persistent: æstivation strongly imbricated. Petals as many as sepals and alternate with them, hypogynous, with short claws, fugitive: æstivation twisted. Stamens as many as the petals (often with intermediate teeth or abortive stamens), united at the base in a hypogynous ring, persistent: anthers fixed by the middle, introrse, with no manifest connectivum. Ovary of 5 (rarely 3 or 4) united carpels; central axis short or none: styles filiform, distinct (rarely united): stigmas capitate. Capsule globose, often pointed with the persistent and hardened base of the styles, 5- (or sometimes 3–4-) celled; each cell completely or partially divided by a false dissepiment proceeding from the dorsal suture: dehiscence septicidal; carpels 2-valved at the apex. Seeds 2 in each carpel (1 in each spurious cell), collateral, suspended from near the summit, anatropous, ovate, compressed; testa smooth, mucilaginous when moistened: albumen none or very thin. Embryo flat, fleshy and oily: cotyledons elliptical.—Herbaceous or suffrutescent. Leaves entire, without stipules, sessile, alternate, or often opposite and alternate in the same plant. Flowers terminal, often corymbed or paniculate.

1. LINUM. *Linn.* (in part); *DC. prodr.* 1. *p.* 423.

Sepals (entire), petals, and stamens 5. Styles 5, or rarely 3.—*Flax.*

1. *L. rigidum* (Pursh): stem angled, much branched above; leaves alternate, linear, pungently acute, rigid, with scabrous margins; flowers panicled or corymbose; sepals ovate-lanceolate, cuspidate, glandularly spinulose-scabrous on the margins, longer than the globose capsule; petals sulphur-yellow.—*Pursh, fl.* 1. *p.* 210; *Nutt.! gen.* 1. *p.* 206; *Hook.! fl. Bor.-Am.* 1. *p.* 105. L. striatum, *Nutt. l. c. ex Hook.*
β.? Berendieri: low; margins of the leaves smooth; flowers larger.—L. Berendieri, *Hook. bot. mag. t.* 3480.
From the Missouri, *Nuttall! Dr. James!* to the Saskatchawan, *Dr. Richardson,* and California, *Nuttall! β.* Texas, *Drummond!* Also near New Haven. Connecticut, *Oakes!* N. Carolina, *Schweinitz!* Georgia, *Dr. Boykin!*—① Calyx with 3 strong nerves. Bracts glandular like the sepals. Flowers smaller than in L. usitatissimum; but about their size in *β.*

2. *L. Virginianum* (Linn.): glabrous; stem branching above; leaves alternate, oblong-lanceolate or linear, the lowermost oblong, the upper acute; panicles corymbose, with the divisions racemed; flowers unilateral; sepals ovate, mucronate, 1-nerved, a little shorter than the mature depressed-globose capsule; petals yellow.—*Walt. Car. p.* 117; *Michx.! fl.* 2. *p.* 36; *Ell. sk.* 1. *p.* 375; *Hook. l. c.*
On hills, &c. Upper Canada! to Alabama! and Florida! west to Arkansas! May–Aug.—① Stem about 2 feet high, slender. Leaves rarely opposite, 1-nerved. Flowers very small, on short pedicels.

3. *L. usitatissimum* (Linn.): glabrous; stem branching above; leaves alternate, linear-lanceolate, very acute; panicle corymbose; sepals ovate, acute, 1-nerved (3-nerved at the base), margin membranaceous; petals somewhat crenate, blue.—*Pursh, fl.* 1. *p.* 210; *Torr. fl.* 1. *p.* 330.
In fields: introduced, but hardly naturalized. June–July.—① Leaves 3-nerved. Flowers large. Capsule acuminate.—*Common Flax.*

4. *L. perenne* (Linn.): glabrous; branches virgate; leaves alternate, linear, acute (often pellucid-punctate); flowers terminal and nearly opposite the leaves; sepals oval, with membranaceous margins, 3–5-nerved at the base externally acute or mucronate, internally obtuse, a little shorter than the globose capsule; petals retuse, blue, 3 or 4 times the length of the calyx.—*Eng. bot. t.* 40; *Nutt. gen.* 1. *p.* 206; *Schiede, in Linnæa,* 1. *p.* 71; *Hook. fl. Bor.-Am.* 1. *p.* 106. L. Sibiricum, *Linn.; DC. l. c.* L. Lewisii, *Pursh, fl.* 1. *p.* 210.

Western portions of N. America, from the Arctic Sea (ex *Hook.*) to Missouri! and Arkansas! west to the Rocky Mountains (*Douglas*, *Nuttall! Mr. Wyeth!*) and the shores of the Pacific. (Common also in Europe and Asia).— ♃ or nearly so. Stems procumbent at the base. Peduncles nodding, at least in fruit. Flowers large.

5. *L. selaginoides* (Lam.): glabrous; stems a span high, suffruticose, corymbosely branched at the summit; leaves crowded, alternate, very small, linear and very narrow, mucronate-piliferous; flowers terminal, subsessile; petals shorter than the calyx (whitish or rose-color); ovary completely 10-celled. *A. St. Hil.—Lam. dict.* 3. *p.* 525; *DC. prodr.* 1. *p.* 424; *Schiede, l. c. p.* 67; *A. St. Hil. fl. Bras.* 1. *p.* 131.
Texas, *Drummond!*—The specimens of no. 47 (37?) in Drummond's 2nd collection agree minutely with the very detailed descriptions of L. selaginoides by St. Hilaire & Schiede, except that in our plant the stems are nearly erect, sparingly branched, and (as well as the midrib and margins of the leaves) minutely and sparsely scabrous-hispid; the margin of the rigid sepals is broadly scarious, slightly ciliate-serrulate above; the filaments are not remarkably broad; and the styles, which are twice the length of the ovary, are united for more than half their length, which is very remarkable in this family. Still, as the descriptions referred to are not sufficiently explicit upon some of these points, it is not improbable that our plant belongs this species.

‡ *Doubtful species.*

6. *L. striatum* (Walt.): flowers terminal; leaves subovate, alternate, the nerve and margin decurrent into the stem; stem branched, striate. *Walt. Car. p.* 118; *Poir. suppl.* 3. *p.* 443.
South Carolina, *Walter.*—Perhaps L. perenne?

ORDER XXVIII. GERANIACEÆ. *DC.*

Sepals 5, persistent, ribbed (one sometimes saccate or spurred): æstivation imbricated. Petals 5 (rarely 4), hypogynous or somewhat perigynous, alternate with the sepals, distinct, unguiculate: æstivation twisted. Stamens as many or commonly twice as many as petals, and inserted with them, monadelphous at the base: anthers fixed by the middle, introrse, with no connectivum. Ovary composed of 5 two-ovuled carpels, placed alternate with the sepals round the base of an elongated axis: styles 5, cohering round the axis, stigmatose at the summit within. Carpels distinct in fruit, membranaceous, 1- (rarely 2-) seeded, at length separating from the axis by the twisting or curling back of the indurated style, mostly dehiscent by the inner suture. Seeds anatropous, with a lateral hilum and a short raphe, exalbuminous. Radicle straight: cotyledons reflexed, foliaceous, convolute and plaited.— Herbs or shrubby plants: stems tumid and separable at the nodes. Leaves opposite (or alternate and opposite the peduncles), mostly stipulate, petioled, palmately (rarely pinnately) veined and lobed, or sometimes undivided. Peduncles terminal or opposite the leaves, sometimes axillary.

1. GERANIUM. *Linn.* (in part); *L'Her.; Gærtn. fr. t.* 79.

Sepals equal. Petals 5, equal. Stamens 10, all fertile; alternate ones larger, with a nectariferous gland at their base. Persistent styles at length circinately revolute, glabrous within.—Herbaceous or rarely suffrutescent. Peduncles 1–2-flowered (2- rarely 3-flowered in the North American species).

* *Perennial.* (*Pubescence of the stem and petioles retrorse in the North American species.*)

1. *G. maculatum* (Linn.): stem erect, (often nearly glabrous below) dichotomous, somewhat angled, pubescent; leaves 3–5-parted; the segments acute, cuneiform below, incisely serrate above; the radical leaves on long petioles; uppermost opposite; petals entire; filaments scarcely ciliate at the base. *Hook.—Michx.! fl.* 2. *p.* 157; *Ell. sk.* 2. *p.* 157; *Bigel. med. bot. t.* 8; *DC. prodr.* 1. *p.* 642; *Hook. fl. Bor.-Am.* 1. *p.* 115; *Darlingt. fl. Cest. ed.* 2. *p.* 392.

In open woods, &c. Canada! to Florida; west to the Mississippi. April–June.—Stem 1–2 feet high. Leaves hirsutely pubescent; the lobes incisely toothed or cleft. Pedicels unequal. Sepals oblong or oval-lanceolate, mucronate-awned, sparsely clothed with long white hairs: pubescence not glandular. Petals large, purple (sometimes almost white), cuneiform-obovate, densely villous with short hairs at the base. Seeds minutely reticulated.—*Crow-foot. Spotted Cranes-bill.*

2. *G. albiflorum* (Hook.): stem erect, dichotomous, somewhat angled, glabrous below; glandular-pilose above; leaves deeply 5-parted; segments ovate, acuminate, incisely subpinnatifid, rather hairy; radical ones on long petioles; the uppermost opposite, on short petioles, 3-parted, rather acuminate; sepals glandular-pilose; petals (entire, white) as well as filaments hirsute at the base. *Hook. l. c. p.* 116, *t.* 40, *& in bot. mag. t.* 3124.

β.? incisum: leaves almost 5-divided; segments narrower; flowers purple.—G. incisum, *Nutt.! mss.*

Vallies of the Rocky Mountains, *Drummond!*—Nearly allied to G. maculatum and G. pratense. *Hook.*— *β.* Vallies of the Rocky Mountains and Oregon, *Nuttall!*—A portion only of the hairs on the peduncles, sepals, &c. is glandular; and the pubescence is much denser and shorter than in G. maculatum. We have the same plant from Altaic Siberia, sent by Prof. Fischer. The var. *β.?* which we doubt not is wholly distinct from G. maculatum, may perhaps prove to be distinct from G. albiflorum. The petals have a lateral tuft of hairs at the base.

3. *G. erianthum* (DC.): stem erect, angled, (terete, *DC.*) sparingly dichotomous, minutely pubescent or nearly glabrous below; leaves deeply 5–7-lobed; lobes 3-cleft; segments laciniate-incised; radical ones on long petioles; the uppermost subsessile; peduncles short and crowded; sepals and base of the petals and stamens densely villous.—*DC. prodr.* 1. *p.* 641; *Bong.! veg. Sitcha, l. c. p.* 129; *Hook. & Arn. in bot. Beechey, p.* 113. G. eriostemon, *Fisch. in DC. l. c.?* ex *Hook. & Arn.* G. maculatum *β. Hook. fl. l. c.?*

N. W. Coast & Kamtschatka, *De Cand. Hook. & Arn.* Sitcha, *Bongard!*—Flowers purple ("perhaps blue," *Bongard*), the size of G. maculatum. Sepals narrower than in the 2 preceding species, very hirsute externally with long white hairs; the same kind of pubescence also on the base of the filaments.—These 3 species, it would seem from our specimens, may be further distinguished by the villosity of the petals; which in G. maculatum forms a small and very dense white tuft on the claw inside; in G. albiflorum the hairs are longer and more scattered, occupying the lower half of the upper surface; in G. erianthum the dense villosity is situated on the edges of the petals near the base.

* * *Annual.*

4. *G. Carolinianum* (Linn.): stem diffusely branched; leaves deeply 5-lobed or parted; segments incisely lobed or toothed; peduncles mostly short and rather crowded at the summit of the branches; petals emarginate, about the length of the aristate-mucronate sepals; carpels hairy; seeds oval, minutely reticulated.—*Walt. Car. p.* 175; "*Cav. diss. t.* 84 & 124"; *Michx. fl.* 2. *p.* 28; *Ell. sk.* 2. *p.* 157; *Hook. l. c.; Darlingt. l. c.* G. lanuginosum, *Jacq. hort. Schœnb.* 2. *t.* 140.

In barren places from Canada! (lat. 52°, *Hook.*) to Florida! Louisiana! west to the Rocky Mountains in lat. 52°, and California, *Hook. & Arn. in bot. Beechey.* Oregon, *Nuttall!* March–June.—Root somewhat fusiform. Stem 4–12 inches high, pubescent below, villous above; hairs retrorse or sometimes spreading. Sepals hairy. Petals rather obcordate, rose-color. Carpels sometimes 2-seeded, ex *Ell.*—Variable in the lobes of the leaves, which are usually short and obtuse. The seeds are not perfectly smooth, as is said by De Candolle, but minutely reticulated, though by no means so conspicuously as in G. dissectum, to which it is closely allied. This last species is considered as a native of North America by Pursh, probably on insufficient grounds: we have seen no native specimens.

5. *G. pusillum* (Linn.): stem procumbent, minutely pubescent; leaves reniform, the lowest suborbicular, deeply 5–7-lobed; lobes 3-cleft (of the upper leaves nearly entire); petals emarginate, about the length of the hairy somewhat acuminate sepals; carpels minutely pubescent; seeds smooth.—*Torr.! compend. p.* 254; *DC. prodr.* 1. *p.* 643. G. malvæfolium, *Lam. fl. Fran.* 3. *p.* 18.

Road-sides, Long Island! and Western part of the State of New-York! Introduced. May–July.—Stem extensively spreading. Flowers small, pale purple. Alternate stamens usually sterile.

6. *G. Robertianum* (Linn.): diffuse, hairy; leaves 3–5-parted to the base; segments pinnatifid; lobes mostly incised or toothed; petals entire (purple), twice the length of the mucronate-awned sepals; carpels reticulate-rugose, glabrous; seeds smooth.—*Willd. sp.* 3. *p.* 714; *Pursh, fl.* 2. *p.* 449; *DC. prodr.* 1. *p.* 644. Ne [illegible]

Wet rocks, Canada! to Virginia! west to the Mississippi. June–Oct.—Calyx 1–3-ribbed. Petals spatulate.—Pursh's very incorrect remark that the American plant has not the same heavy and disagreeable odor as the European, has induced De Candolle to consider our plant as a distinct variety.

‡ *Doubtful species.*

7. *G. cæspitosum* (James): suberect, sparingly branched above; radical leaves reniform, deeply 5–7-cleft; flower a little larger than that of G. Robertianum, but similarly colored. *James, in Long's exped.* 2. *p.* 3.

On sandstone ledges at the base of the Rocky Mountains, *Dr. James.*

2. ERODIUM. *L'Her.; Willd. sp.* 3. *p.* 625.

Sepals equal, regular. Petals 5, mostly equal. Stamens 10; the 5 exterior (opposite the petals) shorter and sterile; the perfect ones with a nectariferous gland at their base. Persistent styles bearded within, at length spirally twisted.—Peduncles axillary or opposite the leaves, many- (rarely 2-) flowered: flowers umbellate. Cotyledons sometimes pinnately lobed.

1. *E. cicutarium* (L'Her.): stem prostrate or diffuse, hairy; leaves pinnately divided; segments sessile, pinnatifid, incised or acute; peduncles many- [or few-] flowered; petals unequal. *DC. prodr.* 1. *p.* 646; *Hook. fl. Bor.-Am.* 1. *p.* 116; *Hook. & Arn. in bot. Beechey, p.* 136. Geranium cicutarium, *Linn.*

Oregon & California, common, *Nuttall! &c.*—"Certainly not introduced." *Nutt.*

E. moschatum, California, [illegible]

ORDER XXIX. BALSAMINACEÆ. *A. Richard.*

Sepals 5, deciduous; the two inner (or upper) usually connate; the lowest spurred or gibbous: æstivation imbricated. Petals hypogynous, usually 4 (5, but the fifth or posterior one abortive) and united by pairs; rarely 5 and distinct. Stamens 5, hypogynous: filaments subulate: anthers 2-celled. Ovary 5-celled [placentæ in the axis], ovules usually numerous, rarely few in each cell, suspended: stigmas 5, sessile, distinct or more or less united. Fruit capsular, 5-celled (the dissepiments usually disappearing), 5-valved, elastically septifragal; or [in Hydrocera, *Blume*] a 5-celled drupe. Seeds several in each cell [anatropous], destitute of albumen. Embryo straight: cotyledons plano-convex.—Succulent herbaceous plants. Leaves simple, opposite or alternate, exstipulate. Flowers axillary. *Arn.*

1. IMPATIENS. *Linn.; W. & Arn. prodr. Ind. Or.* 1. *p.* 135.

Impatiens & Balsamina, *Riv.; DC.*

Sepals apparently only 4 from the union of the two upper ones. Petals 4, apparently only two from the union of each of the lower to each of the lateral ones. Filaments 5, more or less united at the apex: anthers opening longitudinally or transversely. Cells of the ovary formed by membranous projections of the placentæ, which occupy the axis of the ovary and are connected with its apex by 5 slender threads. Capsule often 1-celled by the disappearance of the dissepiments. Seeds numerous or few. *Arn.*

§. ***Leaves alternate: peduncles more than 1-flowered. (Glabrous: stems transparent, tumid at the joints.)***

1. *I. pallida* (Nutt.): leaves oval or ovate, coarsely and obtusely serrate; teeth mucronate; peduncles 2–4-flowered; lower sepal obtusely conic, dilated, shorter than the petals, broader than long, with a very short recurved spur; flowers pale yellow, sparingly punctate.—*Nutt. gen.* 1. *p.* 146; *DC. prodr.* 1. *p.* 687; *Hook. fl. Bor.-Am.* 1. *p.* 117. I. nolitangere, *Michx.! fl.* 2. *p.* 149 (*a.*); *Pursh, fl.* 1. *p.* 171; *Ell. sk.* 1. *p.* 303.

In moist shady places, Canada! to Georgia & west to Kentucky! (Oregon, *Hooker.*) July–Sept.— ① Stem 2–5 feet high, much branched. Leaves mostly obtuse at the base, on short petioles. Flower large.—*Balsam. Snap-weed.*

2. *I. fulva* (Nutt.): somewhat glaucous; leaves rhombic-ovate, coarsely and obtusely serrate, teeth mucronate; peduncles 2–4-flowered; lower sepal acutely conic, longer than the petals, with a rather long resupinate spur; flower deep orange, with numerous reddish-brown spots.—*Nutt. l. c.; DC. l. c.; Hook. l. c.* I. biflora, *Walt. Car. p.* 219; *Pursh, l. c.; Ell. sk.* 1. *p.* 304. I. nolitangere, *β. Michx.! l. c.; Bigel. fl. Bost. ed.* 2. *p.* 93. I. maculata, *Muhl. cat. p.* 26.

In wet shady places, from Canada! (lat. 66°) and Newfoundland (*Hooker*) to Georgia; more abundant than the preceding in the Northern States. Oregon, *Dr. Scouler! Nuttall!* June–Sept.— ① A smaller plant than I. pallida, with smaller flowers. Leaves mostly cuneiform at the base, on slender petioles. Lower sepal longer than broad.—*Balsam. Snap-weed.*

ORDER XXX. LIMNANTHACEÆ. *R. Br.*

Sepals 3–5, united at the base, persistent, with a valvate æstivation. Petals 3–5, marcescent. Stamens twice the number of the petals, and inserted with them upon a thin somewhat perigynous disk: filaments distinct, those opposite the sepals having a small process or gland at the base on the outside, those opposite the petals sometimes shortest: anthers roundish, introrse. Ovary consisting of 2–5 distinct carpels, opposite the sepals; the styles united into one nearly to the top: stigmas simple. Achenia rather fleshy, the cavity filled by the solitary seed. Seed erect, anatropous, without albumen. Embryo with very large amygdaloid cotyledons; radicle very short, included.—Annual glabrous herbs (exclusively North American), with more or less of the acrid taste of Tropæolum, growing in swampy places. Leaves alternate, exstipulate, pinnately divided. Flowers axillary, solitary: peduncles somewhat dilated at the apex.

The ovaries in this order have a gynobasic structure; that is, are more or less distinct, with the styles united by means of a more or less manifest central axis, which is a prolongation of the flattened torus on which the ovaries rest. The order is evidently more nearly allied to Tropæolum than to any other known plants.

1. LIMNANTHES. *R. Br. in Lond. & Edinb. phil. mag. July,* 1833; *Lindl. bot. reg. t.* 1673.

Sepals 5. Petals 5, cuneiform, retuse, longer than the sepals: æstivation convolute. Stamens 10. Ovaries 5.—Leaves bipinnatifid; the divisions often alternate.

L. Douglasii (R. Brown, l. c.)—*Benth. in. hort. trans.* (*ser.* 2.) 1 *p.* 409. *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 378.

California, *Douglas.*—Slightly succulent. Flowers rather conspicuous. Petals of a delicate yellow at the base, bordered with white.

2. FLŒRKEA. *Willd. act. nat. cur. Berol.* 3. (1801); *Nutt. gen.* 1. *p.* 228; *Lindl. in Hook. jour. bot.* 1. *p.* 1. *t.* 113.

Sepals 3 (rarely 4). Petals 3, shorter than the calyx. Stamens 6. Ovaries 2–3, tuberculate.—Leaves pinnately divided or parted; the divisions mostly entire.

F. proserpinacoides (Willd. l. c.)—*Lindl. l. c.*—F. uliginosa, *Muhl. cat. p.* 36; *Torr.! fl.* 1. *p.* 339; *Darlingt. fl. Cest. ed.* 2. *p.* 213. F. lacustris, *Pers. syn.* 1. *p.* 393. F. palustris, *Nutt. l. c.* Nectris pinnata, *Pursh, fl.* 1. *p.* 239. Cochlearia foliis pinnatifidis, &c. *Gron.! Virg.* (excl. syn.)
On the banks of rivers and in marshes, Northern States! (lat 41°) to Pennsylvania! west to Missouri! April–May.—Slightly succulent, pale green. Stem decumbent, 3–10 or 12 inches long, slender. Leaves on slender petioles: divisions about 5, lanceolate or oval, obscurely veined; the lowermost often 3-lobed or toothed. Flowers small. Petals oblong, white, about half the length of the calyx. Achenia large, commonly 2, rarely by abortion solitary.

ORDER XXXI. OXALIDACEÆ. *DC.*

Sepals 5, equal, distinct or slightly cohering at the base, persistent: æstivation imbricated. Petals 5, hypogynous, equal, unguiculate, deciduous: æstivation spirally twisted. Stamens 10, hypogynous, more or less monadelphous: filaments subulate, those opposite the petals longer than the others: anthers short, fixed by the middle, introrse, often reflexed and appearing extrorse. Ovary of 5 united carpels, situated opposite the petals: styles filiform, distinct: stigmas capitate or penicillate, sometimes 2-lobed. Capsule usually membranaceous, 5-lobed, 5-celled; the carpels at length mostly separable to the axis, opening by the dorsal suture, 1–12-seeded. Seeds anatropous, with a loose fleshy testa (aril of authors) which bursts elastically when the seeds are ripe: albumen between cartilaginous and fleshy. Embryo straight, as long as the albumen, with a rather long radicle: cotyledons broad and foliaceous.—Stems with an acid juice. Leaves mostly alternate, compound: petioles articulated at the base.

1. OXALIS. *Linn.; Gærtn. fr. t.* 113.

Sepals distinct, or united at the very base. Capsule oblong or subglobose, membranaceous. Seeds one or commonly several in each carpel: tegmen 5–10 ribbed, transversely rugose.—Perennial (rarely annual) herbs; caulescent or acaulescent. Leaves in North American species 3-foliolate (in others rarely pinnate or reduced to a single leaflet), circinate in vernation: leaflets distinctly articulated with the petiole, lobed or entire. Stipules coherent with the base of the petiole, after the manner of Trifolium, or none.—*Wood-Sorrel.*

1. *O. Acetosella* (Linn.): rhizoma creeping, scaly; leaflets obcordate, puberulent; scapes at length longer than the leaves, 1-flowered, 2-bracteolate above the middle; petals oblong-obovate (white with red veins, yellowish at the base), often slightly emarginate; styles and longer stamens of equal length, longer than the sepals.—*Eng. bot. t.* 762; *Michx.! fl.* 2. *p.* 38; *DC. prodr.* 1. *p.* 700; *Hook. fl. Bor.-Am.* 1. *p.* 118 (partly). O. Americana, *Bigel. in DC. l. c.*

In woods, from lat 41°! to the northern part of Canada. June.— ♃ Rhizoma clothed with the imbricated and fleshy persistent bases of the leaves. Peduncles 2–3 inches long; the portion above the bracts pubescent. Flower large. Stigmas 2-lobed. Cells of the capsule about 2-seeded.— *Wood-Sorrel.*

2. *O. Oregana* (Nutt.! mss.): "rhizoma creeping, thick and scaly; leaflets (large) very broadly obcordate, ciliate; scapes 1-flowered, shorter than the leaves, 2-bracteolate above the middle; petals oblong-obovate, emarginate (white with purple veins, yellow at the base); stamens and styles all shorter than, or scarcely exceeding, the sepals."—O. Acetosella, *Hook. l. c.* partly.

Shady woods of the Oregon in moist places, *Nuttall! Dr. Scouler!*— ♃ Flowers, and especially the leaves, larger than in O. Acetosella: leaflets about an inch long and an inch and a half wide. Scapes always manifestly shorter than the leaves.

3. *O. trilliifolia* (Hook.): acaulescent; peduncles umbelliferous, equalling the petioles; leaflets obcordate, glabrous; styles the length of the longer stamens. *Hook. fl. Bor.-Am.* 1. *p.* 118.—O. macrophylla, *Dougl. mss.* ex *Hook.*

"N. W. Coast, near the Grand Rapids of the Oregon, and in valleys of the Rocky Mountains," *Douglas;* also *Nuttall!*— ♃ "Petioles 6–12 inches high. Leaves very large, and when the plant is out of flower might be mistaken for those of Trillium grandiflorum." *Dougl. in Hook. l. c.*—"Root creeping. Leaflets about 2 inches broad. Pedicels shorter than the pods. Flowers about the size of those of O. Acetosella, white." *Nutt.*

4. *O. violacea* (Linn.): bulb scaly; leaflets obcordate with a very shallow sinus, broader than long, nearly glabrous; scapes longer than the leaves, 3–9-flowered; pedicels umbellate; with minute bracts at the base; sepals with a thickened orange-colored tip; petals obovate (violet); filaments hairy, at length equalling or longer than the styles.—*Jacq. Oxal. p.* 35. *t.* 80. *fig.* 2. fide *Willd. sp.* 2. *p.* 786; *Michx. l. c.; Ell. sk.* 2. *p.* 525; *DC. l. c. p.* 695.

In rocky woods, &c., Canada (*Linn.*) and New-England States! to Georgia. west to Arkansas, *Dr. Pitcher!* and Texas, *Drummond!* April–May, and sometimes again in August.—Bulb clothed with membranaceous scales. Scapes 6–9 inches high, generally slightly bifid at the summit. Leaves with transparent dots. Flowers large. Capsule oblong, few-seeded. Styles hairy, at first longer than the stamens: stigmas 2-lobed.

5. *O. corniculata* (Linn.): [root perennial;] stems decumbent, branched, radicating, leafy; stipules united to the base of the petiole; leaflets obcordate, pubescent; peduncles 2–5- but mostly 2-flowered; sepals pubescent; petals (yellow) emarginate; styles as long as the longer stamens; capsule many-seeded, densely pubescent. *Arn.*—*DC. prodr.* 1. *p.* 692; *Michx. fl.* 2. *p.* 39; *Hook. fl. Bor.-Am.* 1. *p.* 117. O. pusilla, *Salisb. in Linn. trans.* 2. *p.* 242, *t.* 23. O. furcata, *Ell. sk.* 1. *p.* 527? O. Lyoni, *Pursh, fl.* 1. *p.* 322?

In cultivated grounds, Canada to Carolina, *Michaux & Pursh.* Louisiana! west to California, *Hook. & Arn.*—The only specimens we have seen with manifest stipules are from New Orleans. Not being able to satisfy ourselves of the real distinctions, if there be any, between this and the succeeding species, we copy the characters of authors, and refer all the perennial forms to O. corniculata, and the annual ones to O. stricta. Two unpublished species of Nuttall, O. pumila from Oregon, and O. pilosa from California, we should also refer to O. corniculata.*

6. *O. stricta* (Linn.): [root annual;] stem erect, leafy; peduncles umbelliferous, 2–6-flowered, about the length of the leaves; leaflets obcordate; petals [yellow] entire; styles the length of the inner stamens. *DC. l. c.; Jacq. Oxal. t.* 4; *Fl. Dan. t.* 873; *Michx. l. c.; Pursh, fl.* 1. *p.* 322; *Ell. sk.* 1. *p.* 526; *Hook. l. c.* O. Dillenii, *Willd. sp.* 2. *p.* 799. O. recurva, *Ell. l. c.*

In cultivated grounds, Canada ! to Louisiana ! Common west of the Rocky Mountains, *Douglas* ex *Hook.*—Variable in size, mode of growth, and in the number and magnitude of the flowers. Flowers throughout the summer.

ORDER XXXII. ZYGOPHYLLACEÆ. *R. Br.*

Flowers perfect, regular. Sepals 4–5: æstivation usually convolute. Petals as many as sepals, and alternate with them, unguiculate, at first very short and scale-like (in æstivation mostly convolute), at length rather longer than the sepals. Stamens twice as many as the petals, hypogynous: filaments distinct, dilated at the base, sometimes placed on the back of a small scale: anthers fixed near their middle, introrse. Ovary composed of 4–5 united carpels placed opposite the petals, surrounded at the base with 5 scales or glands, or by a sinuate disk: ovules in each carpel 2 or more, attached to the inner angle, pendulous or rarely erect: styles and stigmas united. Fruit capsular or rarely fleshy, 4–5-coccous (or 10-coccous by the carpels being spuriously 2-celled), indehiscent, the cocci at length separating, or loculicidal; the sarcocarp not separable from the endocarp. Seeds usually fewer than the ovules, anatropous: albumen cartilaginous or horny, rarely none. Embryo green: cotyledons foliaceous.—Herbs, shrubs, or trees; with the branches mostly articulated at the nodes. Leaves opposite, stipulate, not dotted, rarely simple.

TRIBE I. TRIBULEÆ. *Ad. Juss.*

Stigma 5- or 10-ribbed, broader than the short style. Carpels indehiscent, externally tuberculate or prickly, internally divided by obliquely transverse partitions into 2–4 superposed 1-seeded cells; or spuriously 2-celled by a longitudinal septum. Seeds destitute of albumen.

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* The characters given by Mr. Nuttall are subjoined:

"*O. pumila:* perennial, more or less hairy; umbelliferous 2-flowered peduncles scarcely longer than the petioles; leaflets obcordate, deeply emarginated; sepals oblong-lanceolate; styles shorter than the inner stamens; capsules nearly smooth, about twice the length of the calyx.—Forests of the Rocky Mountains and Oregon. Root at length woody; branches decumbent. Capsules unusually short." *Nutt.*

"*O. pilosa:* perennial, densely hirsute, decumbent; peduncles about 1-flowered [1–3 in specimen], longer than the petioles; leaflets obcordate, almost bifid; sepals lanceolate; styles short; capsules very hairy, more than 3 times the length of the calyx.—Woods around St. Barbara, California. A small very hairy species, with yellow flowers: nearly allied to the preceding." *Nutt.*

1. KALLSTRŒMIA. *Scop.; W. & Arn. prodr. Ind. Or.* 1. *p.* 145.

Sepals 5 (rarely 6), persistent. Petals 5, obovate. Stamens 10: filaments naked; the 5 opposite the sepals somewhat abortive, placed inside 5 hypogynous glands. Ovary of 5 cohering carpels; each with 2 collateral pendulous ovules, and spuriously 2-celled by a longitudinal septum (the ovary thus being apparently 10-celled with a solitary ovule in each cell): style conical, 10-furrowed: stigma capitate, 10-ribbed. Fruit at length separating into 10 one-seeded cocci, without transverse partitions.—Annual branching diffuse or trailing pubescent herbs. Leaves opposite, with interpetiolar stipules, abruptly pinnate. Peduncles solitary, axillary, 1-flowered.

We are unable to quote the work in which this genus was originally described. According to Arnott, Ehrenbergia tribuloides, *Mart. nov. gen. & sp. Bras.* 2. *p.* 72. *t.* 163, is a second species of the genus, which sometimes has 6 sepals, 12 stamens, &c.

1. *K. maxima:* leaflets in 3 or rarely 4 pairs, oblong or oval, mucronate, slightly falcate, pubescent beneath, the terminal ones largest; flowers yellow; cocci gibbous below, tuberculate.—Tribulus maximus, *Linn.; Jacq. ic. rar.* 3. *t.* 62; *Willd. sp.* 2. *p.* 566; *Ell. sk.* 1. *p.* 476; *DC. prodr.* 1. *p.* 704; *Torr.! in ann. lyc. New-York*, 2. *p.* 173. T. trijugatus, *Nutt.! gen.* 1. *p.* 277?; *DC. l. c.* T. terrestris, *Muhl.! cat. p.* 43.
In waste places, Savannah, Georgia, *Nuttall! Elliott:* introduced from the West Indies? Arkansas, *Dr. James!* June–Sept.—Stems diffusely procumbent, 1–2 feet long. Peduncles an inch long. Petals marcescent.

ORDER XXXIII. ZANTHOXYLACEÆ. *Ad. Juss.*

Flowers by abortion diœcious or polygamous, regular. Sepals 3–4–5, very rarely 6–9, cohering at the base. Petals as many as sepals, or rarely none: æstivation twisted-convolute. Stamens as many as the petals and alternate with them, or seldom twice as many, rising from around the base of the torus which bears the abortive carpels; in the pistillate flowers either wanting or imperfect: filaments distinct: anthers introrse. Ovaries usually the same number as the sepals or sometimes fewer, more or less stipitate, either distinct or united: ovules 2 or rarely 4 in each carpel: styles distinct or more or less connate when the ovaries are separate, mostly combined when the ovaries are united. Fruit sometimes baccate or membranaceous, sometimes consisting of 1–5 drupes or 2-valved capsules; the rather fleshy sarcocarp partly separable from the endocarp. Seeds solitary or in pairs, anatropous, pendulous: testa thick and crustaceous, usually smooth and shining. Embryo lying within fleshy albu-

men: cotyledons oval, flat.—Trees or shrubs, aromatic and bitter. Leaves alternate or opposite, exstipulate, simple or usually pinnate: leaflets mostly marked with pellucid dots.

1. ZANTHOXYLUM. *Linn.; H. B. & K. nov. gen. & sp.* 6. *p.* 1.

Diœcious. Sepals 3–9, small. Petals longer than the sepals, or none. Stamens as many as the sepals and opposite them (or fewer), mostly exserted; those of the pistillate flowers rudimentary. Ovaries 1–5, raised on a globose or cylindrical torus, distinct, with 2 collateral suspended ovules: styles distinct, or united at the apex, sometimes very short. Carpels crustaceous in fruit, sessile on the torus or stipitate, 2-valved, 1–2-seeded. Seeds black and shining, globose when solitary, hemispherical when in pairs.—Trees or shrubs, usually with prickles on the branches, petioles, and midrib of the leaflets. Leaves pinnately 3–13-foliolate. Flowers small, greenish or whitish: inflorescence various.

§ 1. *Sepals 5 or more, petaloid, with a minute glandular beard at the apex: petals none: ovaries as many as sepals and opposite them: styles terminating in clavate stigmas, which are at first connate.*—ZANTHOXYLUM, Colden.

1. *Z. Americanum* (Mill. dict.): branches and often petioles armed with short strong (stipular) prickles; leaves pinnate; leaflets ovate-oblong, nearly sessile, obscurely serrulate or entire, more or less pubescent; flowers in short axillary umbels; carpels stipitate.—*Willd. beschr.* (1781) *p.* 116. Z. fraxinifolium, *Marsh. arbust.* (1785.) Z. fraxineum, ~~*Willd.*~~ *Berl. baum.* (1796), *& sp.* 4. *p.* 757; *Pursh, fl.* 1. *p.* 210; *DC. prodr.* 1. *p.* 726; *Hook. fl. Bor.-Am.* 1. *p.* 118; *Bigel. med. bot. t.* 59. Z. ramiflorum, *Michx.! fl.* 2. *p.* 235. Z. tricarpum, *Hook. l. c.* not of *Michx.* Z. Clava-Herculis, var. *Linn.* Z. mite, *Willd. enum. p.* 1013; *DC. l. c.*
Canada! to Virginia; west to the Mississippi. April–May.—A shrub or very small tree; the bark pungent to the taste. Flowers greenish. Leaves often nearly glabrous when mature, sometimes tomentose beneath. Seeds large, black.—*Prickly Ash.*

§ 2. *Sepals, petals, and stamens* 5: *ovaries usually* 3: *styles short.*—OCHROXYLUM, *Schreb.* (Kampmannia, *Raf.* ex *Ad. Juss.*)

2. *Z. Carolinianum* (Lam.): branches and usually petioles armed with long stipular prickles; leaves pinnate; leaflets ovate-lanceolate, inequilateral, somewhat falcate, petiolulate, crenate-serrulate, glabrous, lucid above; flowers in terminal panicles; sepals minute; carpels sessile.—*Lam. dict.* (1786) 2. *p.* 40; *Catesb. Car.* 1. *t.* 26. Z. tricarpum, *Michx.! l. c.; Pursh, l. c.; Ell. sk.* 2. *p.* 690; *DC. l. c.* Z. fraxinifolium, *Walt. Car. p.* 243. Fagara fraxinifolia, *Lam. ill. t.* 334.
In sandy soil near the sea-coast, N. Carolina! Georgia! and Florida; west to Arkansas! June.—A small tree (the *Prickly Ash* of the Southern States); the leaves and bark very aromatic and pungent. Prickles very sharp.

2. PTELEA. *Linn.; Lam. ill. t.* 84; *Gærtn. fr. t.* 49.

Polygamous. Sepals 3–6, commonly 4, small. Petals much longer than the sepals, spreading. Stamens alternate with and longer than the petals: filaments thickened below and hairy on the inside; in the fertile flowers very short and with sterile anthers. Ovary of 2 united carpels, placed on a convex torus: ovules 2 in each carpel, situated one above the other: styles short, united, or none: stigmas 2. Fruit a 2-celled samara, turgid in the centre, the margin expanded into a broad orbicular membranaceous and reticulated wing. Seeds oblong, solitary in each cell.—Shrubs. Leaves pinnately 3-(rarely 5-) foliolate, with pellucid dots, the lateral leaflets inequilateral. Flowers whitish, cymose: cymes corymbed or panicled.

1. *P. trifoliata* (Linn.): leaflets sessile, ovate, mostly acuminate, the terminal one cuneiform and attenuate at the base; flowers commonly tetrandrous; style short.—*Walt. Car. p.* 88; *Michx.! fl.* 1. *p.* 99; *Ell. sk.* 1. *p.* 211; *Torr.! fl.* 1. *p.* 189; *DC. prodr.* 2. *p.* 82.

In shady rocky places, from Lake Erie! to Florida! west to Kentucky! and Texas! June.—Pubescent when young, 6–8 feet high. Leaflets obscurely crenulate. Ovary of the staminate flowers abortive. Odor of the flowers disagreeable.—P. monophylla, *Lam. dict.* appears not to belong to the genus, and is perhaps a Rumex, as is suggested by Ad. Jussieu.

2. *P. Baldwinii:* leaves very small, glabrous; leaflets sessile, oval, obtuse, the terminal one cuneiform at the base; flowers tetrandrous; styles none.

St. John's, East Florida, *Baldwin!* (in herb Acad. Philad.)—Shrub apparently not more than a foot high, with numerous short scraggy branches. Leaflets scarcely an inch in length. Flowers smaller than in P. trifolia. Fruit not seen.

3. PITAVIA. *Molin. Chil.*

Galvezia, *Ruiz. & Pav.; Ad. Juss.;* not of *Domb. in Juss. gen.*

Flowers by abortion diclinous. Calyx 4-parted. Petals 4, longer than the calyx. STERILE FL. Stamens 8; the 4 opposite the petals shorter: filaments subulate, glabrous, inserted around the base of the oblong gynophore which supports 3–4 distinct abortive ovaries; the styles coherent with each other above. FERTILE FL. Ovaries 4, on a 4-angled fleshy gynophore, each with 2 collateral ovules: styles rising from the apex of the ovaries, distinct at the base, coalescent above: stigmas connate into a single 4-lobed one. Drupes 4, or by abortion fewer, 1-seeded. Seed ovoid, with a straight embryo. *Ad. Juss. sub* Galvezia.

1. *P. dumosa* (Nutt.! mss.)

St. Diego, California, *Nuttall!*—A low branching shrub. Leaves opposite or fascicled on short branches; linear, attenuate at the base, obtuse, about an inch long, rather thick, 1-nerved, marked with glandular pellucid dots; the margin with a row of glandular dots, but entire. Flowers, in the specimens, all perfect, nearly solitary at the extremity of the branches, small, on short peduncles. Petals somewhat unequal. Stamens 8, the alternate ones smallest; or in some flowers only 4. Ovary solitary, simple, subglobose, placed on a minute flat 8-toothed disk, 1-celled, with 2 collateral ovules: style lateral (arising from about the middle of the ovary): stigma a little thickened, somewhat grooved. Fruit a single globose 1-seeded drupaceous nut (?), about the size of a pea. Seed globose, with a somewhat crustaceous testa.—We have failed, by some accident, to receive Mr. Nuttall's notes on this plant; and have drawn up the preceding description from incomplete specimens. It will be seen that the plant differs considerably from the genus Pitavia (or Galvezia) as defined by Ad. Jussieu, in his *Mém. sur des Rutacées*, from which the generic character given above has been extracted; and it is very probably not a congener of Galvezia punctata, *Ruiz & Pav.* The sterile flowers, if they exist, we have not seen; those in our specimen being apparently perfect.

Order XXXIV. ANACARDIACEÆ. *R. Br.*

Flowers perfect, or frequently diclinous, regular. Sepals 5, or rarely 3–4–7, distinct or more or less combined, usually persistent. Petals of the same number as the sepals (or sometimes none), inserted into the disk which lines the bottom of the calyx: æstivation imbricated or rarely valvate. Stamens as many as the petals and alternate with them, or twice as many or more, a portion sometimes sterile: filaments distinct, sometimes alternately shorter, inserted with the petals: anthers introrse. Ovary solitary (of 1–5 carpels, distinct or united, but all abortive except one), free, or rarely adhering to the calyx, 1–celled, or with one or two abortive cells of the suppressed carpels: ovule solitary, on a funiculus which rises from the base of the cell but is sometimes adnate to one of its sides: styles 3 or rarely 4–5, distinct or combined: stigmas as many. Fruit indehiscent, usually drupaceous, 1–seeded. Seed erect or suspended, anatropous, without albumen. Embryo more or less curved: cotyledons very thick and fleshy, sometimes foliaceous, often bent upon the radicle.—Trees or shrubs, with a resinous, gummy, caustic or milky juice. Leaves simple or compound, alternate, exstipulate, not dotted. Flowers axillary or terminal, mostly panicled.

1. RHUS. *Linn.; Lam. ill. t.* 207.

Sepals 5, united at the base, small, persistent. Petals 5, ovate, spreading, inserted under the margin of the orbicular disk. Stamens 5 (rarely 10), equal, inserted into the disk. Styles 3, distinct or united: stigmas 3, subcapitate. Fruit almost a dry drupe; nut bony, 1–celled. Seed solitary, suspended on a funiculus that rises from the base to the apex of the cell. Cotyledons foliaceous, incumbent upon the radicle.—Shrubs or small trees. Leaves simple, or unequally pinnate. Flowers often by abortion polygamous or diœcious.

§ 1. *Flowers perfect: drupe semi-obcordate, reticulately veined; nut triangular: leaves simple: flowers in loose panicles.*—Cotinus, Tourn.

1. *R. Cotinus?* (Linn.): leaves obovate, entire; a great part of the flowers abortive, the pedicels at length elongated and clothed with large shaggy

hairs.—*Willd. sp.* 1. *p.* 1484; *DC. prodr.* 2. *p.* 67. R. cotinoides, *Nutt.! in herb. acad. Philad.*

On the high rocky banks of Grand River, Arkansas, *Nuttall!* certainly indigenous.—Mr. Nuttall's specimens are in fruit only: an examination of the flowers will probably prove it to be distinct from R. Cotinus, a native of the South of Europe and Middle Asia, but not unfrequently cultivated in gardens.

§ 2. *Flowers perfect, polygamous or diœcious: disk entire or lobed: drupe roundish, sometimes hairy: nut smooth or sulcate. Leaves unequally pinnate or 3-foliolate; the petiole often winged: flowers panicled.*—SUMAC, DC.

1. *R. typhina* (Linn.): branches and petioles densely villous; leaflets 11–31, whitish and more or less pubescent beneath, oblong-lanceolate, acuminate, acutely serrate; panicles terminal, thyrsoid; drupes densely clothed with crimson hairs.—*Duham. arb.* 2. *t.* 47; *Michx.! fl.* 1. *p.* 182; *Ell. sk.* 1. *p.* 360; *DC. prodr.* 2. *p.* 67. R. Canadense, *Mill. dict.* R. viridiflora, *Poir. dict.* 7. *p.* 504; *DC. l. c.*

Canada! to S. Carolina & Louisiana! June.—A shrub, or small tree (20 feet high) with spreading branches. Petioles at length 2–3 feet long. Flowers greenish-yellow, often polygamous or diœcious by abortion. Drupe compressed; the hairs very acid. Cellular tissue of the wood orange-color, with a strong aromatic odor: juice resinous, copious.—*Stag-horn Sumach.*

2. *R. glabra* (Linn.): leaves and branches glabrous; leaflets 13–31, lanceolate-oblong, acuminate, acutely serrate, glaucous beneath; panicles terminal, thyrsoid; drupes red, clothed with crimson hairs.—*Michx.! fl.* 1. *p.* 182; *Ell. sk.* 1. *p.* 361; *Bigel. fl. Bost. ed.* 2. *p.* 118; *Hook. fl. Bor.-Am.* 1. *p.* 126. R. Carolinianum, *Mill. dict.* R. elegans, *Ait. Kew.* (*ed.* 1.) *p.* 162. R. Virginicum etc., *Catesb. Car. app. t.* 4.

In rocky or barren places, Canada! (on the Saskatchawan, *Hooker*) to Georgia & Louisiana! July–Aug.—A stout shrub, 5–18 feet high, with a resinous milky juice. Leaves usually smaller than in R. typhina. Flowers often diœcious. Down of the drupes very acid (the malic, according to *Cozzens, in ann. lyc. New-York* 1. *p.* 42; bimalate of lime,) *Prof. W. B. Rogers in Amer. journ. pharm.* (*n. ser.*) 1. *p.* 56. The leaves and branches of this and the preceding species are astringent and sometimes used in tanning.—*Smooth Sumach.*

3. *R. pumila* (Michx.): procumbent, villous-pubescent; leaflets about 11, oval or oblong, slightly acuminate, coarsely toothed, with a velvety pubescence; panicles terminal, thyrsoid, nearly sessile; drupes clothed with a red silky pubescence.—*Michx.! fl.* 1. *p.* 182; *Pursh, fl.* 1. *p.* 204; *DC. l. c.*

In grassy pine barrens, Mecklenberg County, N. Carolina, *Michaux, Nuttall!* also on the Neuse River, *Schweinitz!*—An extensively procumbent shrub; the branches about a foot high. The 3 upper leaflets often confluent; the terminal one when distinct attenuate at the base.—A very poisonous species.

4. *R. Copallina* (Linn.): branches and petioles pubescent; leaflets 9–21, oval-lanceolate or oblong, mostly acute or acuminate, shining above, pubescent beneath, unequal at the base; petiole winged; panicles terminal, thyrsoid, sessile, sometimes leafy; drupes red, hairy.

α. leaflets entire, usually acuminate.—R. Copallina, *Linn.*; *Walt. Car. p.* 225; *Michx.! fl.* 1. *p.* 182; *Jacq. hort. Schœnb.* 3. *p.* 50. *t.* 341; *Ell. sk.* 1. *p.* 362.

β. leaflets coarsely and unequally serrate.

γ. leaflets (about 31) small, oblong, acute at the base; obtuse and slightly mucronate at the apex; petiole narrowly winged.

In barren places, Canada! to Florida! and west to Arkansas! β. Highlands of the Hudson River, *Dr. Barratt!* Mountains of Pennsylvania, *Dr. Darlington.* Red River, Louisiana, *Dr. Hale!* γ. Tampa Bay, Florida, *Dr. Burrows!* July–Aug.—Stem 3–8 feet high, branched; juice resinous. Veins of the upper surface of the leaves pubescent. Wing of the petiole usually broad, interrupted at the leaflets. Peduncles downy. Drupes small, compressed, acid.

5. ***R. venenata*** (DC.): glabrous; leaflets 7–13 (membranaceous), obovate-oblong, entire, abruptly acuminate; panicles slender, in the axils of the uppermost leaves; drupes subglobose, smooth, greenish-white.—*DC. prodr.* 2. *p.* 68; *Beck, bot. p.* 76; *Hook. l. c.; Darlingt. fl. Cest. ed.* 2. *p.* 207. R. Vernix, *Linn.* (in part); *Michx.! fl.* 1. *p.* 183; *Ell. l. c.; Bigel. med. bot.* 1. *p.* 96. *t.* 10.

In swamps, Canada and Northern States! to Georgia! west to Alexandria, Louisiana, *Dr. Hale!* June.—A shrub, 8–15 feet high, very poisonous to the touch with most persons. Leaves often slightly pubescent beneath. Flowers greenish, mostly diœcious, small. Drupe as large as a pea: nut broader than long, compressed, ridged. Cotyledons oval, rather thick and fleshy.—The juice of this shrub is a varnish, like that of the Japanese plant (R. vernicifera, *DC. l. c.*), from which it has only recently been distinguished. (See *Bigel. l. c.*)—*Poison Sumach, Poison Elder,* &c.

6. ***R. Toxicodendron*** (Linn.): stem erect, decumbent, or climbing by radicles; leaves 3-foliolate, somewhat pubescent; leaflets (membranaceous) broadly oval or rhomboid, acuminate, entire or toothed, the lateral ones inequilateral; panicles racemed, axillary, subsessile; drupes subglobose, smooth.—*Michx.! fl.* 1. *p.* 183; *Torr.! fl.* 1. *p.* 323. R. Toxicodendron & radicans, *Linn.; Nutt.; DC. &c.*

α. not climbing; leaves entire, or variously and irregularly sinuate-toothed or lobed.—R. Toxicodendron, *Linn.; Nutt. &c.* R. Toxicodendron β. quercifolium, *Michx. l. c.*

β. climbing; leaves more commonly entire or nearly so.—R. radicans, *Linn.; Bot. mag. t.* 1806; *Bigel. med. bot.* 3. *p.* 19, *t.* 42; *DC. l. c.* R. Toxicodendron α. vulgare, *Michx. l. c.* R. Toxicodendron β. radicans, *Torr.! fl. l. c.*

γ. leaves oval-oblong; fruit smaller.—R. Toxicodendron γ. microcarpon, *Michx. l. c.*

In rather shady usually damp places, Canada! (on the Saskatchawan, *Hooker*) to Georgia! west to Arkansas! & the Rocky Mountains! N. W. America, *Douglas* (ex *Hooker*). May–June.—A low shrub, or climbing; poisonous like the preceding. Leaflets large, petiolulate. Flowers mostly diœcious, greenish. Drupes nearly the size of the preceding, pale chestnut-color.—*Poison-Ivy, Poison-Oak, &c.*

7. ***R. diversiloba:*** nearly glabrous; stem scarcely climbing, with short leafy branches; leaves 3- (rarely 5-) foliolate; leaflets very obtuse, in the pistillate plant slightly, in the staminate rather deeply pinnately lobed; lobes very obtuse, the incisions acute; panicles axillary, racemose; drupes subglobose.—R. lobata, *Hook. fl. Bor.-Am.* 1. *p.* 127, *t.* 46, *& in bot. Beechey, p.* 137 (the male), not of *Poir.* R. Toxicodendron, *Hook. & Arn. in bot. Beechey, l. c.* (the pistillate plant)?

Borders of woods &c., Oregon, *Douglas, Nuttall!* & California, *Beechey, Nuttall!*—"The sterile and fertile flowers in this species (which is very near R. Toxicodendron) present some notable differences. The sterile, which is figured by Hooker, has rather deeply lobed leaflets, sometimes in fives, and larger flowers: in the fertile the leaflets are almost entire or slightly lobed and the flowers considerably smaller, so that it might readily be taken for a distinct species. The fruit is white, somewhat pubescent and gibbous." *Nutt.*—The panicles are often shorter than the petioles.

§ 3. *Flowers diœcious or polygamous: disk glandular, deeply 5-lobed (lobes opposite the petals): drupe globose, villous: nut smooth, compressed: flowers in short aments, preceding the leaves. Leaves 3-foliolate.* —LOBADIUM, Raf.

8. ***R. aromatica*** (Ait.): leaves pubescent when young (at length coriaceous and often glabrous); leaflets sessile, rhomboid-ovate, unequally and incisely toothed, the terminal one narrowed at the base.—*Ait. Kew.* (*ed.* 1.) 1. *p.* 367; *Turpin, in ann. mus.* 5. *p.* 445. *t.* 30; *Pursh, fl.* 1. *p.* 205; *Ell. sk.* 1. *p.* 364; *Hook. l. c.* R. suaveolens, *Ait. l. c.* R. Canadense, *Marsh. arbust.? ; DC. l. c. p.* 73. Lobadium aromaticum, *Raf. in jour. phys.* 89. *p.* 98. Turpinia, *Raf. in Desv. jour. bot.* 2. *p.* 170. Schmalzia, *Desv. l. c.* In dry rocky places, from the Saskatchawan River (*Hooker*) to Georgia! west to Arkansas! April–May.—A small aromatic shrub. Flowers small, yellow, on short pedicels, from axillary aments formed during the previous summer. Drupes the size of a small pea, light red, more or less hispid, slightly compressed, agreeably acid. This plant varies greatly in the degree of pubescence of the leaves. R. suaveolens of Aiton differs merely in the leaves being almost glabrous, so that we have no hesitation in referring it to the present species.

9. ***R. trilobata*** (Nutt.! mss.): "leaves glabrous, small; lateral leaflets obovate, obtuse, 3-lobed at the apex or nearly entire; terminal leaflet cuneiform, 3-lobed at the summit, the middle lobe sometimes 3-toothed.

"In the central chain of the Rocky Mountains.—A low leafy shrub; the leaves much smaller than in R. aromatica: terminal leaflet broad, ½–1 inch in length; lateral ones smaller. Drupes scarlet, acid; the nut flat, scarcely striate." *Nutt.*

§ 4. "*Flowers perfect* [*or polygamous*]*: calyx subcampanulate: disk fleshy, entire: stamens* 5–10*: styles united, very short: drupe globose, with a thin and rather dry resinous aromatic pulp: nut orbicular, compressed, even. Leaves simple, coriaceous, entire: flowers in paniculate racemes, terminal and in the axils of the upper leaves.*—MALOSMA," Nutt.

10. ***R. laurina*** (Nutt.! mss.): "very glabrous; leaves elliptical or elliptic-ovate, obtuse or emarginate, often mucronate, on rather long petioles; panicles crowded; stamens 5; filaments very short.

"On bushy plains, near St. Barbara, California.—A low spreading tree or large shrub, much branched and very leafy, exhaling to a considerable distance an aromatic odor, something like that of the Bitter Almond, (whence the name, from μαλα *valdè* & οσμος, *odor.*) Leaves very pale, pinnately but not prominently veined, about 2 inches long, often slightly emarginate at both ends: petioles more than ½ an inch in length. Flowers very small and numerous. Calyx fleshy; segments obtuse. Petals oblong, a little longer than the calyx. Stigmas 3, minute.—To this subgenus, or rather perhaps, genus, belongs the *Llithi* of Fuillèe, or Laurus caustica of Molina, the Rhus? caustica, *Hook. & Arn. bot. Beechey's voy. p.* 15. *t.* 7, a species which differs from ours in its larger decandrous flowers, and much shorter petioles: we are not informed whether the fruit of that species yields an aromatic odor. Mauria, *H. B. & K.* also differs but little from the plants of this curious section; and both possess the venomous properties of Toxicodendron." *Nutt.* —The R.? caustica, *Hook. & Arn.* is described as diœcious; but the accompanying plate represents, among others, one apparently perfect flower.

2. STYPHONIA. *Nutt. mss.*

"Sepals 7–9, colored, concave, with scarious margins, imbricated in several series, persistent, somewhat similar to the rather imbricated bracteoles at the base. Petals 5, oblong, slightly unguiculate, of the same texture as the sepals, pubescent within near the base, inserted under the margin of the disk. Stamens 5–7. Style short: stigma minute, 3-lobed. Fruit a dry flattened drupe; the pulp very acid and astringent: nut compressed, bony, 1-celled. Seed solitary, suspended from a funiculus rising from the base of the cell.—Low and much branched submaritime trees. Leaves simple, alternate, thick and coriaceous, persistent. Flowers polygamous, sessile, in terminal contracted panicles. Bark exuding small quantities of a very astringent gum-resin." *Nutt.*

1. *S. integrifolia* (Nutt.! mss.): "leaves oval, very obtuse at both ends, entire, on short petioles.

"On the margins of cliffs, &c. near the sea, around St. Diego & St. Barbara; common.—An unsightly tree, about the thickness of a man's arm, branching widely and forming almost impervious thickets, glabrous; the young leaves and branches minutely pubescent. Leaves an inch or more long, three times the length of the petioles, rather prominently veined beneath. Flowers in few-flowered sessile clusters upon the short branches of the panicle. Sepals and petals reddish. Drupes the size of a pea, hirsute.—Fruit similar in most respects to that of Rhus § Sumac; inflorescence somewhat approaching that of Lobadium; differing from both, particularly in the gradual transition from bracts to petals. To this genus apparently belongs Rhus atra, *Forst.*, of New Caledonia, of which I have seen an original specimen, but without the flowers: the leaves are 3–4 inches long, very thick and rigid, attenuated into short petioles, with very prominent anastomozing pinnate veins. Rhus mollis, *H. B. & K.*, also evidently belongs to the genus." *Nutt.*

2. *S. serrata* (Nutt.! mss.): "leaves oval or ovate, on very short petioles, sharply repand-serrate.

"With the preceding, from which it differs merely in its leaves, which when young are sharply serrate with small mucronate teeth; the older leaves are obscurely repand-serrate." *Nutt.*

ORDER XXXV. AMYRIDACEÆ. *R. Br.*

Flowers perfect, regular. Sepals 4, or rarely 5, small, united at the base, persistent. Petals as many as sepals, hypogynous (or none): æstivation imbricated. Stamens twice the number of the petals, hypogynous, distinct: anthers introrse. Ovary solitary, simple, 1-celled, seated on a thickened disk: stigma capitate, sessile: ovules 2–6, pendulous. Fruit drupaceous, leguminous, or samaroid, glandular, indehiscent, 1–2-seeded. Seeds anatropous, destitute of albumen. Embryo with a very short radicle, and thick fleshy cotyledons.—Resiniferous trees or shrubs. Leaves pinnately 3–7-foliolate, opposite, with glandular pellucid dots, mostly destitute of stipules. Flowers panicled. Pericarp covered with granular glands, filled with an aromatic oil.

1. AMYRIS. *Linn.; DC. prodr.* 2. *p.* 81.

Sepals 4, united at the base. Petals 4, cuneiform or unguiculate. Stamens 8, shorter than the petals. Drupe 1-seeded: nucleus chartaceous.—Flowers white.

1. *A. Floridana* (Nutt.): leaves on very short petioles, 3-foliolate; leaflets ovate, petiolulate, obtuse or sub-acuminate, strongly reticulate-veined, the margin mostly entire; flowers somewhat panicled; drupes subglobose, attenuate at the base.—*Nutt.! in Sill. jour.* 5. *p.* 294; *DC. prodr.* 2. *p.* 81.

East Florida, *Mr. Ware.*—A shrub. Flowers not seen. Petiolules of the terminal leaflet a little longest.—A. toxifera, *Catesb. Car.* is wrongly credited to the United States.

ORDER XXXVI. AURANTIACEÆ. *Correa.*

Sepals united into a short 3–5-toothed urceolate or campanulate marcescent calyx. Petals 3–5, broad at the base, slightly imbricated in æstivation, inserted on the outside of a conspicuous hypogynous disk. Stamens equal in number to, or some multiple of, the petals, inserted upon the disk in a single series: filaments flattened below, sometimes distinct, sometimes monadelphous or polyadelphous: anthers innate or attached near the base, versatile, the connectivum articulated with the filament. Ovary several-celled, composed of several united carpels: style 1, cylindrical: stigma somewhat lobed, thickish. Fruit (an orange) consisting of several (or by abortion of 1) membranaceous carpels, commonly filled with pulp, and surrounded by a thickish indehiscent rind abounding in receptacles of volatile oil. Seeds solitary or several, and attached to the inner angle of each carpel, usually pendulous, anatropous; the raphe and chalaza usually very distinctly marked: albumen none. Embryo straight; the cotyledons large and thick, fleshy, partly concealing the radicle: plumule usually conspicuous.—Trees or shrubs (tropical), often with axillary spines, almost always glabrous, every part abounding in pellucid glands full of volatile oil. Leaves alternate, coriaceous, exstipulate, usually compound; the petiole often dilated or winged: when apparently simple the lamina is articulated with the petiole, showing that they are pinnate leaves reduced to the terminal leaflet. Flowers very odorous.

1. LIMONIA. *Linn.; Lam. ill. t.* 353; *W. & Arn. prodr. Ind. Or.* 1. *p.* 91.

Flowers and carpels symmetrical, in a quaternary or quinary proportion. Calyx 4–5-cleft. Petals 4–5. Stamens 8-10: filaments distinct, subulate: anthers cordate-oblong. Torus elevated, forming a short stalk to the ovary. Ovary obovate, 4–5-celled, glabrous, with 1–2 collateral pendulous ovules from the top of each cell: style elongated: stigmas obtuse. Fruit baccate, with 4–5 cells, or by abortion fewer. Seeds solitary in each cell, surrounded with mucilage.—Shrubs or trees. Leaves simple, 3-foliolate, or pinnate. *W. & Arn.*

1. *L. acidissima?* (Linn.): leaves pinnate; leaflets roundish-oval, crenate; spines geminate. *Nutt. in Sill. jour.* 5. *p.* 295. L. ambigua, *DC. prodr.* 1. *p.* 536.

East Florida, collected by *Mr. Ware. Nutt.*—The specimens collected by Mr. Ware are very imperfect, and exhibit neither the flowers nor fruit. We possess similar specimens of the same plant collected in Southern Florida by Dr. Hassler and communicated to us by the Columbian Horticultural Society. The plant is probably not indigenous to Florida. Wight & Arnott unite L. crenulata with L. acidissima.

CITRUS.—Wm. Bartram (in his *Travels through North and South Carolina, Georgia, and Florida,* 1791,) makes frequent mention of extensive groves of wild Orange trees in East Florida, as far north as lat 28°. In a notice of the town of New Smyrna he observes: "I was there about 10 years ago, when the surveyor run the lines of the colony, where there was neither habitation nor cleared field. It was then a famous Orange grove, the upper or south promontory of a ridge nearly half a mile wide, and stretching north about 40 miles, &c. &c. All this was *one entire Orange grove,* with Live-Oaks, Magnolias, Palms, Red Bays, and others." *Bartr. l. c. note on p.* 244. See also p. 253, &c. These groves seem to be well-known in Florida at the present day, and are generally supposed to be indigenous. According to the late Mr. Croom "they are rarely found north of lat. 29° 30′, although there is a small grove near the Alligator Pond, which is somewhat north of lat. 30°." *Croom, mss.* The fruit is known by the name of *Bitter-sweet Orange.*

ORDER XXXVII. TERNSTRŒMIACEÆ. *Mirb.; Kunth.*

Ternstrœmiaceæ & Theaceæ, *Mirb.*

Sepals 3–5, concave, coriaceous, persistent, the innermost often largest: æstivation imbricated. Petals mostly 5, hypogynous, alternate with the sepals, often united at the base. Stamens indefinite, inserted with the petals: filaments filiform, usually monadelphous or polyadelphous at the base, often adherent to the base of the petals: anthers adnate or versatile. Ovary 2–7-celled, usually sessile on a discoid torus: ovules 2 or more in each cell: placentæ in the axis: styles 2–7, distinct or combined. Fruit 2–7-celled, capsular, baccate, or coriaceous and indehiscent. Seeds usually few and large, anatropous or campulitropous, with or without albumen. Embryo straight or curved: cotyledons often large and containing oil.—Trees or shrubs. Leaves alternate, mostly coriaceous, exstipulate, now and then with pellucid dots. Peduncles axillary and terminal. Flowers large and showy.

TRIBE GORDONIEÆ. *DC.*

Capsule loculicidal. Seeds destitute of albumen, winged or margined: cotyledons foliaceous, wrinkled and plaited lengthwise.—Small trees or shrubs, natives of the Southern Atlantic states. Leaves serrate or nearly entire. Flowers large, axillary (or terminal), solitary.

1. GORDONIA. *Ellis, in phil. trans.* (60. *t.* 11); *Cav. diss.* 6. *t.* 161.

Sepals 5, roundish, coriaceous, strongly imbricated. Petals 5, somewhat united at the base. Styles united into one, columnar. Capsule woody, ovoid or globose, 5-valved. Seeds 2 in each cell, with a short terminal or lateral wing.—Trees. Flowers white.

§ 1. *Tube of the filaments short, 5-lobed, adnate to the base of the petals: style as long as the stamens: capsule ovoid. Leaves coriaceous, perennial: flowers on slender peduncles.*—LASIANTHUS, DC.

1. *G. Lasianthus* (Linn.): leaves lanceolate-oblong, narrowed at the base, coriaceous, smooth and shining on both sides, finely and sharply serrate; peduncles somewhat shorter than the leaves; sepals densely silky, ciliate; capsule conical, acuminate.—*Linn. mant.* 1. *p.* 570; *Cav. l. c.; Bot. mag. t.* 668; *Michx.! fl.* 2. *p.* 42; *Pursh! fl.* 2. *p.* 451; *Michx. f. sylv.* 1. *p.* 295, *t.* 58; *Ell. sk.* 2. *p.* 171; *DC. prodr.* 1. *p.* 528; *Audubon, birds of Amer. t.* 168. Hypericum Lasianthus, *Linn. hort. Cliff. p.* 380. Alcea Floridana, &c., *Catesb. Car.* 1. *t.* 44.
In shallow swamps, near the coast, Virginia to Florida! May–Aug.—Tree 50–80 feet high (wood light, mahogany-color). Leaves subsessile. Peduncles 3–4-bracteolate under the flower. Petals somewhat hairy outside. Capsule rarely 6-celled, 6-valved.—*Loblolly Bay.*—A second species, apparently of this section, is G. Wallichii, *DC.* (G. Chilaunea, *Don*), a native of Nepal.

§ 2. *Filaments distinct, adnate to the base of the petals: style shorter than the stamens: capsule globose. Leaves deciduous: flowers subsessile.*—FRANKLINIA, Bartram.

2. *G. pubescens* (L' Her.): leaves oblong-cuneiform, finely and sharply serrate, shining above, canescent beneath, rather thin and membranaceous; sepals and petals silky-pubescent beneath.—*L'Her. stirp. p.* 156; *Vent. Malm. t.* 1; *Cav. diss.* 6. *t.* 162; *Willd. sp.* 3. *p.* 841; *Michx.! fl.* 2. *p.* 42; *Pursh, fl.* 2. *p.* 451; *Michx. f. sylv.* 1. *t.* 59; *Ell. sk.* 2. *p.* 171; *DC. prodr.* 1. *p.* 528; *Audubon, birds of Amer. t.* 185. G. Franklinii, *L'Her. l. c. p.* 156; *Willd. l. c.* Franklinia Americana & Altamaha, *Marsh. arbust. p.* 48. Lacathea florida, *Salisb. parad. Lond. t.* 56.
Near Fort Barrington, on the Altamaha, Georgia, *Bartram!* Florida, (*herb. Schweintz!*). May–Aug.—Tree 30–50 feet high, with widely spreading branches. Leaves nearly sessile, veiny. Flowers about 3 inches in diameter. Filaments yellow.

2. STUARTIA. *Catesb. Car. t.* 13; *Linn; L'Her. stirp. t.* 73 *&* 74.

Stewartia & Malachodendron, *Cav.; DC.*

Sepals 5, more or less united at the base, 1–2-bracteolate. Petals 5, united at the base; the margins crenulate. Tube of the stamens adnate to the base of the petals. Styles 5, filiform, distinct, or united into one. Capsule somewhat woody, 5-celled, 5-valved. Seeds 2 in each cell, slightly margined.—Shrubs with ovate membranaceous deciduous leaves, and large (white or cream-colored) subsessile flowers.

1. *S. Malachodendron* (Linn.): leaves oval, mostly acuminate at each end, mucronately serrulate, clothed with a soft pubescence beneath; sepals obtuse, united below; styles united; capsule globose.—*Linn. sp. p.* 982, & *in act. Upsal.* (1741) *t.* 2; *L'Her. stirp. t.* 73; *Gronov. Virg. p.* 101; *Walt. Car. p.* 176; *Lam. ill. t.* 593. S. Virginica, *Cav. diss.* 5. *t.* 159; *Michx.! fl.* 2. *p.* 43; *Pursh, fl.* 2. *p.* 451; *Ell. sk.* 2. *p.* 172; *DC. prodr.* 1. *p.* 528. S. Marilandica, *Andrews, bot. rep. t.* ~~78~~. 397

Virginia! to Florida! (in swamps, *Pursh:* in dry rich soils, *Elliott*) from the coast to near the mountains; Red River, Louisiana, *Dr. Hale!* April–June.—Shrub 6–12 feet high; branches geniculate, pubescent when young. Leaves on short petioles. Flowers occasionally in pairs. Sepals roundish, with 2 small bracteoles at the base, silky beneath. Petals a little hairy beneath, white. Filaments short, purple: anthers blue. Stigmas 5-lobed. Capsule hairy.

2. *S. pentagyna* (L'Her.): leaves oval or ovate, acuminate, entire or mucronately serrulate, somewhat pubescent beneath; sepals lanceolate; styles distinct; capsule 5-angled.—*L'Her. stirp. t.* 74; *Willd. sp.* 3. *p.* 840; *Smith, exot. bot. t.* 101; *Pursh, fl.* 2. *p.* 452; *Ell. sk.* 2. *p.* 173. Malachodendron ovatum, *Cav. diss.* 5. *t.* 158; *Michx. l. c.; DC. prodr.* 1. *p.* 528; *Bot. reg. t.* 1104.

N. Carolina! to Georgia! in the mountains. May—July.—Shrub closely resembling the preceding, but with rather larger, cream-colored, and more deeply crenulate petals. Sepals and capsule hairy; the latter with 5 salient angles, woody. Seeds 2 in each cell, oval or nearly orbicular, plano-convex; testa crustaceous, dilated into a slight somewhat membranaceous margin.

ORDER XXXVIII. MALVACEÆ. *Juss.* (in part); *DC.*

Sepals 5 (rarely 3 or 4), more or less united at the base, often having an external calyx or involucel: æstivation valvate. Petals hypogynous, equal in number to the sepals, with a twisted æstivation. Stamens hypogynous, usually indefinite, or rarely as few as the petals, monadelphous: anthers 1-celled, reniform, bursting transversely: pollen hispid. Ovary formed by the union of several carpels round a common axis, either distinct or cohering: styles as many as the carpels, united or distinct: stigmas as many or twice as many as the carpels. Fruit capsular, or rarely baccate: carpels 1- or many-seeded, sometimes closely united, sometimes separate or separable; the dehiscence loculicidal or septicidal. Seeds campulitropous or heterotropous, with little or no albumen. Embryo curved: cotyledons foliaceous, twisted and doubled up.—Herbs or shrubs. Leaves alternate, stipulate, mostly palmately veined: pubescence mostly stellate.

1. MALOPE. *Linn.; Lam. ill. t.* 583; *DC. prodr.* 1. *p.* 429.

Calyx surrounded by an involucel of 3 cordate leaves. Carpels numerous, distinct, 1-seeded, aggregated without order.—Herbs with purplish or white flowers.

1. *M. Malacoides* (Linn.): leaves ovate, crenate; stipules oblong-linear;

peduncles axillary, 1-flowered. *DC.—Nutt. gen.* 2. *p.* 82; *Ell. sk.* 2. *p.* 164. Malva Americana, *Muhl. cat. p.* 65, fide *Elliott.*

Pennsylvania, *Muhlenberg;* Virginia? *Elliott.*— ① Stem 12–18 inches high, sparingly branched, clothed with white hairs toward the summit. Leaves ovate, toothed, very obtuse at the base, nearly glabrous above, hairy on the veins beneath: petioles an inch long. Flowers axillary, solitary: peduncles 2–3 lines long. Bracteoles setaceous. Petals twice as long as the calyx, yellow. Carpels hispid, collected into a depressed globular head. *Elliott.*—Nuttall, who saw the plant here described in Elliott's herbarium, considered it the Malope Malacoides. According to Elliott it is the Malva Americana of Muhlenberg, but not of Willdenow. We have not the means of determining the genus of this plant, but believe it to be a species of Malva.

2. MALVA. *Linn.; Lam. ill. t.* 582; *W. & Arn. prodr. Ind. Or.* 1. *p.* 45.

Malva & Callirhoe, *Nutt.* (Nuttallia, *Dick & Bart.*)

Calyx 5-cleft, with an involucel of usually 3, sometimes 1–2 or 5–6 oblong or setaceous bracteoles, or very rarely naked. Carpels several (rarely only 5), dry, indehiscent, circularly arranged round the axis. Radicle inferior.

* *Flowers purple or white.*

† Leaves undivided.

1. *M. rotundifolia* (Linn): stem prostrate; leaves cordate-orbicular, obtusely 5-lobed; petioles pubescent; pedicels axillary, 1-flowered, declined in fruit, elongated; segments of the calyx acutely triangular; involucre 3-leaved; carpels numerous, wrinkled.—*DC. prodr.* 1. *p.* 432; *Pursh, fl.* 2. *p.* 454; *Ell. sk.* 2. *p.* 163.

Road-sides and waste grounds. Introduced from Europe. May–Sept.— ♃ Stem spreading, a foot long. Leaves crenate, on elongated petioles. Flowers half an inch in diameter. Bracteoles oblong-linear. Petals pale purple.

2. *M. obtusa:* stem prostrate: leaves cordate-orbicular, obtusely 5-lobed; petioles elongated, pubescent; peduncles axillary, several together, much shorter than the petioles, declined in fruit?; segments of the calyx short; obtusely triangular; involucre 3-leaved, the bracteoles setaceous; carpels numerous, strongly wrinkled.

California, *Douglas!*—Much resembling the preceding species; but the stem is stouter, the pedicels much shorter, and the segments of the calyx (when in fruit) also shorter and broader.

3. *M. Houghtonii:* stellately hairy; stem herbaceous, erect?; leaves crenate, deltoid-ovate, the radical ones cordate at the base; flowers in a loose terminal panicle; bracteoles 3, linear-spatulate; carpels numerous, not wrinkled.

Dry prairies, North-West Territory, *Dr. Houghton!* Pekin, Illinois, *Mr. Buckley!* July–Aug.—Stem 2–3 feet long, Leaves on long petioles, those of the stem truncate at the base, coarsely crenate, 2–3 inches long. Panicle many-flowered: pedicels several together. Flowers purple, an inch and a half in diameter. Styles 10–12: stigmas simple. Involucre as long as the calyx.

†† Leaves divided.

4. *M. fasciculata* (Nutt. mss): stellately and somewhat canescently pubescent; stem nearly simple; leaves roundish-cordate, somewhat 3-lobed, on

short petioles; rather thick, crenate; flowers in somewhat distant leafless fascicles, on the upper part of the stem; pedicels very short; segments of the calyx short, acuminate; bracteoles 3, subulate; carpels about 10.

St. Barbara, Upper California, *Nuttall!*—Stem about a foot long. Lower leaves 1–1½ inch wide, obscurely 3-lobed; upper ones distinctly 3-lobed: petiole 2–3 lines long. Flowers ¾ of an inch in diameter, 6–10 in a fascicle. Bracteoles more than half as long as the calyx. Stamens very numerous. Carpels not seen.

5. *M. involucrata:* hirsute; stem branching, procumbent; leaves deeply 3–5-parted; segments linear-lanceolate, laciniately 3–5-toothed; flowers few, in a loose panicle; peduncles erect, 1-flowered, longer than the leaves; bracteoles 3, linear-lanceolate, two-thirds the length of the deeply-parted calyx; carpels numerous, hairy, not wrinkled.—Nuttallia involucrata, *Nutt.! ex Torr. in ann. lyc. New-York*, 2. *p.* 172.

β. lineariloba: segments of the leaves divided into 3–5 narrowly linear lobes.

Valley of the Loup Fork of the Platte, *Dr. James! β.* Texas, *Drummond!*—Stem clothed with spreading hairs. Leaves divided nearly to the base, stellately hirsute on both surfaces. Flowers axillary in the uppermost leaves; about 1½ inch in diameter, scarlet: peduncle 1½–2 inches (in *β.* 3–4 inches) long. Sepals very hirsute, lanceolate, united only a little above the base. Ovaries 15–20. Stigmas simple. Carpels (immature) lunate, pointless.

6. *M. Munroana* (Dougl.): lower leaves cordate-orbicular, toothed, upper ones somewhat trifid and incised, pubescent; flowers fascicled, somewhat spiked; peduncles declined in fruit; bracteoles 2–3, slender, deciduous; carpels 8–10.—*Lindl. in bot. reg. t.* 1306; *Hook. fl. Bor.-Am.* 1. *p.* 106. Nuttallia Munroana, *Nutt.! in jour. acad. Philad.* 7. *p.* 16.

Open vallies about the sources of the Oregon, *Mr. Wyeth!* Sandy deserts, from the Great Falls of the Oregon to the Rocky Mountains, *Douglas.* June—♃ Stems about a span long, divided into several slender flowering branches. Leaves on slender petioles, sparingly hirsute with stellate hairs. Peduncles slender. Flowers clustered, 3–5 together, on short pedicels. Calyx densely hairy; the segments short and obtuse. Corolla scarlet, about an inch in diameter.

7. *M. rivularis* (Dougl.): stem herbaceous, stellately pubescent; leaves somewhat scabrous, cordate, deeply 5–7-cleft; lobes acute, coarsely serrate; peduncles terminal and axillary, elongated, 6–8-flowered, racemed, leafy; calyx stellately tomentose; bracteoles setaceous; fruit very hairy. *Hook. fl. Bor.-Am.* 1. *p.* 107.

River banks, N. W. America, from the Ocean to the Rocky Mountains: common. *Douglas.*—♃ Stem 2–4 feet high, branched, robust. Leaves large, smoothish above, scabrous with scattered hairs beneath. Peduncles stellately tomentose: pedicels short, erect. Flowers as large as in Malva rotundifolia, white or flesh-color. *Hook.*

8. *M. Papaver* (Cav.): somewhat scabrous-hirsute; radical leaves on elongated petioles, cordate, more or less deeply 3–5-lobed; cauline ones deeply 3–5 parted; the segments oblong-lanceolate or linear, laciniately toothed or entire; flowers few, on long axillary peduncles, or forming a loose panicle; calyx with 3 bracteoles (rarely naked), hispid.—*Cav. diss.* 2. *t.* 15. *f.* 3; *DC. prodr.* 1. *p.* 431. M. triangulata, *Leavenworth, in Sill. jour.* 7. *p.* 62? M. nuttallioides, *Croom! in Sill. jour.* 26. *p.* 313. Nuttallia cordifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 98. N. Papaver, *Graham, in bot. mag. t.* 3287, *& in Edinb. new phil. jour. no.* 31 (*Jan.* 1834); *Don, in Brit. fl. gard. t.* 279.

Prairies and along rivers; Georgia, *Dr. Boykin!* Middle Florida, *Croom! Dr. Chapman!* Louisiana, *Dr. Hale!* Alabama & Arkansas, *Dr. Leavenworth!* May–Sept.— ♃ Root tuberous, tapering, descending. Stems numerous from one root, somewhat decumbent at the base, branching above. Radical leaves often very obtusely lobed: cauline ones parted nearly to the base; the segments sometimes entire, usually with several coarse teeth, the middle one often pinnatifidly lobed. Peduncles solitary, or more commonly two or more together from the axils of the upper leaves, 3–8 inches long. Flowers as large as in Papaver Rhæas. Bracteoles spatulate-lanceolate. Calyx divided below the middle; segments ovate-lanceolate. Petals bright purplish-red, truncate and erosely crenate at the extremity. Carpels 15–20, disposed in a depressed circle, glabrous, reticulated and lacunose on the back and sides.—The plant of Cavanilles was from Louisiana, for which subsequent authors in copying his description have written "Lusitania." The mistake was first detected by Dr. Graham.

9. *M. digitata:* glaucous and nearly glabrous; leaves deeply 6–7-parted; segments linear, entire or 2- (rarely 3-) cleft, the uppermost entire; flowers few, solitary or somewhat paniculate, on elongated peduncles; calyx naked, glabrous.—Nuttallia digitata, *Hook.! exot. fl.* 3. *t.* 171. Callirrhoe digitata, *Nutt.! in jour. acad. Philad.* 2. *p.* 181.

Prairies of Arkansas, *Nuttall! Dr. Pitcher!* Texas, *Drummond.*— ♃ Root tuberous, somewhat fusiform. Stem 2–4 feet high, terete, slender, with a few branches toward the summit. Flowers 1½–2 inches in diameter, purple. Segments of the calyx ovate-lanceolate, acuminate. Petals crenulate at the summit. Carpels as in the preceding.

10. *M. pedata:* somewhat scabrous with stellate hairs; leaves pedately 5–7-parted; segments laciniately toothed; flowers on elongated peduncles in a loose panicle; calyx naked, slightly hirsute.—Nuttallia pedata, *Nutt.! in Hook. exot. fl.* 3. *t.* 173. N. digitata, *Bart.! fl. Am. Sept.* 2. *t.* 62.

β.? umbellata: stems simple, 1–2-leaved, radical leaves pedate; the middle segment much the largest, laciniately lobed; flowers somewhat umbelled; calyx hirsute.—Sida macrorhiza, *James! mss.*

With the preceding, *Nuttall! β.* Valley of the Platte, *Dr. James!*— ♃ Stems 2–4 feet high; in *β.* about a foot high, springing from a large soft edible root, in shape and size between a small turnip and a parsnip. Lower leaves with 5 primary divisions: the middle, and sometimes the two lateral, segments 3-lobed; lobes entire or toothed, linear or linear-lanceolate. Flowers resembling those of the preceding species, (pale purple in *β. James.*) —Perhaps the last two species are not distinct. The M. pedata figured by Hooker appears to be exactly M. digitata of Barton. The peduncles in *β.* are 1–2 inches long, and so nearly equal that the flowers appear umbellate.

** *Flowers yellow.*

11. *M. hederacea* (Dougl.): perennial, every part of the plant stellately tomentose and hairy; stem short, herbaceous, procumbent; leaves petioled, cordate, undivided and somewhat lobed, crenately serrate, somewhat plicate; peduncles axillary, 1-flowered, longer than the petiole; petals stellately pubescent on the back and margin. *Dougl. in Hook. fl. Bor.-Am.* 1. *p.* 107.

Sides of streams in the interior of Oregon. June–July. *Douglas.*— Plant small. Stem branching toward the base, flexuous. Leaves about an inch wide, somewhat plicate. Segments of the calyx acute, with 3 setaceous deciduous bracteoles. Petals obovate-cuneate or obcordate. *Hook.*

12. *M. plicata* (Nutt. mss.): perennial; stellately and somewhat canescently tomentose, rather thick; stem prostrate, flexuous; leaves reniform-cordate, undivided, crenately serrate, somewhat plicate; flowers nearly sessile, solitary; petals stellately pubescent on the back.

On the Wallawallah, Oregon, *Nuttall!*—Stem scarcely a span long, branching. Leaves rather shorter than the petioles, about an inch in diameter. Flowers 3–4 lines in diameter. Bracteoles usually 2, setaceous, deciduous. Petals roundish-obovate, pubescent externally on one side of the midnerve, glabrous where it is overlapped by the adjoining petal. Fruit not seen.—It appears to agree in almost every respect with the preceding (which we have not seen), except that the flowers are nearly sessile. We cannot determine the color of the flower from our specimen.

M. xanthina of Rafinesque is a variety of M. Alcea, and is probably an introduced plant.

M triloba of Muhlenberg, (*cat. p.* 65; *Nutt. gen.* 2. *p.* 81.)—Of this species we can find no description.

M. abutiloides, Linn. is said by Pursh to occur on the sea-coast of Carolina; but this is very doubtful.

3. SPHÆRALCEA, *A. St. Hil. fl. Bras.* 1. *p.* 207.

Malva § Sphæroma, *DC.*

Calyx 5-cleft, with 3 setaceous bracteoles at the base. Carpels numerous, aggregated in a subglobose head, 2-valved, 2- or several-seeded. Radicle in the upper seed superior, in the lower one inferior.—Herbaceous plants. Leaves entire or lobed. Peduncles short, many-flowered.

1. *S. stellata:* densely clothed with a grayish stellate pubescence; leaves oblong-lanceolate, acute, petioled, erosely serrate, rugose; peduncles axillary, 3–5-flowered; flowers aggregated; carpels 12–14, bimucronate, 2- (rarely 3-) seeded.—Sida stellata, *Torr.! in ann. lyc. New-York,* 2. *p.* 171.

Margins of small brooks, near the sources of the Arkansas, *Dr. James!*—Stem 1–2 feet high, branched. Leaves 2–3 inches long, 4–5 lines wide: petioles about 4 lines long. Flowers very numerous; the common peduncle 2–3 lines long: pedicels extremely short. Bracteoles very slender. Calyx cleft below the middle; segments ovate-lanceolate, acute. Corolla purple (in dried specimens), about half an inch in diameter. Carpels with 2 short slightly recurved points. Seed reniform, glabrous.

2. *S. acerifolia* (Nutt.): minutely roughish-tomentose with a stellate pubescence; leaves 5-lobed, somewhat cordate; the lobes acute, toothed, unequally serrate; peduncles aggregated, terminal; carpels 12–14, pointless.—Malva (Sphæroma) acerifolia, *Nutt.! mss.*

Rivulets east of Wallawallah, *Nuttall!*—Stem much branched. Leaves 2–2½ inches long, and about the same in width: petioles about ½ the length of the lamina. Flowers 3–4 together at the summit of the branches. Bracteoles linear-lanceolate. Calyx cleft to the middle; segments broadly ovate, acute. Corolla an inch in diameter; purple (in dried specimens). Carpels pilose, dehiscing on the back from the summit to the base.—The seeds had mostly fallen out in our specimen, but there appeared to have been 2 or 3 in each carpel, scabrous with short hairs.

4. MODIOLA. *Mœnch, meth.* 620; *A. St. Hil. fl. Bras.* 1. *p.* 211.

Calyx 5-cleft, with 3 bracteoles at the base. Carpels numerous, arranged circularly, 2-valved, spuriously 2-celled transversely by the inflexion of a valve-like process, 2-seeded. Radicle in the upper seed superior, in the lower seed inferior.—Prostrate and usually creeping herbs. Leaves divided. Peduncles axillary, 1-flowered.

1. *M. multifida* (Mœnch): leaves palmately 3–5-lobed; segments incised and toothed; pedicels longer than the petioles; stamens 15–18; carpels 15–20, hispid, with 2 subulate horns.—*Mœnch, l. c.* Malva Caroliniana, *Linn.; Willd. sp.* 3. *p.* 784; *Walt. Car. p.* 176; *Michx.! fl.* 2. *p.* 44; *Ell. sk.* 2. *p.* 163; *DC. prodr.* 1. *p.* 435.

In rich soils, along rivers, and in waste places; Virginia! to Florida! west to Red River, Louisiana! July–Sept.—①? *Ell.* Stem diffuse, more or less hirsute, usually rooting at the lower joints. Leaves 1–2 inches in diameter, truncate or subcordate at the base, hirsute beneath, with a few scattered hairs above. Flowers 5–6 lines in diameter. Bracteoles linear-lanceolate. Segments of the calyx ovate-lanceolate. Petals obovate, purplish-red, a little longer than the calyx. Carpels lunate, much compressed, hispid on the back, wrinkled on the sides toward the base. A rigid process rising from the back on the inside of the carpel extends to the axis, separating the upper from the lower seed.—Very near M. repens, *St. Hil. fl. Bras.* 1. *p.* 212. *t.* 43, & Malva (Modiola) prostrata, *Cav.;* both of which are perhaps but varieties of this species.

5. ALTHÆA. *Cav. diss.* 2. *p.* 91; *DC. prodr.* 1. *p.* 437.

Althæa & Alcea, *Linn.*

Calyx surrounded by a 6–9-cleft involucel. Carpels numerous, indehiscent, 1-seeded, arranged in a circle round the axis.

1. *A. officinalis* (Linn.): leaves softly tomentose on both sides, cordate or ovate, toothed, entire or 3-lobed; peduncles many-flowered, much shorter than the leaves.—*Eng. bot. t.* 147; *Bigel. fl. Bost. p.* 259; *DC. prodr.* 1. *p.* 436.

Borders of salt marshes, Long Island and elsewhere: introduced. Aug.–Sept.— ♃ Root long, white. Stem about 2 feet high. Leaves usually somewhat 3-lobed. Peduncles 3–4-flowered. Flowers an inch or more in diameter, pale rose-color.—*Common Marsh-mallow.*

6. MALVAVISCUS. *Dill.; DC. prodr.* 1. *p.* 445.

Achania, *Swartz.*

Calyx surrounded by an involucel of numerous bracteoles. Petals erect, convolute. Styles 10, united below: stigmas capitellate, the alternate ones longer. Carpels 5, baccate, 1-seeded, somewhat distinct, or united into a 5-celled fruit.—Frutescent (rarely herbaceous?) plants. Flowers red.

1. *M. Floridanus* (Nutt): hirsute; leaves cordate-ovate, crenately serrate, rather acute, on petioles one-fourth their length; peduncles axillary in the uppermost leaves, 1-flowered, nodding; involucel 8–9-leaved, somewhat patulous, rather shorter than the calyx.—*Nutt.! in jour. acad. Philad.* 7. *p.* 89. M. penduliflorus, *DC. prodr.* 1. *p.* 445?

Key West, E. Florida, *Mr. Ware; Mr. Bennett!*—A small shrub. Leaves 1–1½ inch long, hispid with somewhat stellate hairs. Peduncles longer than the petioles. Leaflets of the involucel narrowly linear. Calyx deeply 5-cleft; segments ovate-lanceolate. Corolla about an inch long, scarlet. Stamineal column exserted.—Near M. arboreus.

2. *M. Drummondii:* stem and lower surface of the leaves minutely tomentose; leaves broadly cordate, somewhat 3-lobed, coarsely and crenately toothed; petiole about half as long as the lamina; flowers solitary on axillary peduncles, or several together on short flowering branches; involucel 8-leaved, the folioles spatulate, nearly as long as the calyx, erect; column twice as long as the corolla; carpels connate.

Texas, *Drummond!*—♃ ? Stem tall, branching. Leaves 2–2½ inches long and of nearly the same breadth, somewhat velvety beneath. Flowers as large as in M. arboreus, scarlet. Column very slender, a little declined: stigmas hairy. Fruit (immature) red, subglobose, obtuse; composed of 5 closely united carpels.

7. GOSSYPIUM. *Linn.; Lam. ill. t.* 586; *DC. prodr.* 1. *p.* 456; *W. & Arn. prodr. Ind. Or.* 1. *p.* 54.

Calyx cup-shaped, obtusely 5-toothed, surrounded by a 3-leaved involucel; the leaflets united and cordate at the base, deeply toothed and incised. Styles united: stigmas 3, sometimes 5. Capsule 3–5-celled, loculicidal. Seeds numerous, imbedded in cotton.—Young branches and leaves more or less conspicuously covered with black dots; the nerves beneath usually with one or more glands.—*Cotton-plant.*

1. *G. herbaceum* (Linn.): leaves 3–5-lobed, with a single gland below; lobes mucronate; cotton white.—*DC. prodr.* 1. *p.* 456.

Southern States & Florida! naturalized in some places.—Thirteen species of Cotton are described by De Candolle, and many more are enumerated by some writers. Dr. Hamilton (*Linn. trans.* 13. *p.* 492), who is followed by Wight & Arnott, reduces twelve of De Candolle's species to two, viz: G. album (*Ham.*): seeds and cotton both white; and G. nigrum (*Ham.*): seeds black, cotton white. G. Barbadense, which is said to be the "Sea Island Cotton," is referred to the latter.

8. ABUTILON. *Dill.; Lam. ill. t.* 578; *Kunth, syn.* 3. *p.* 245.

Species of Sida, *Linn.; DC. &c.*

Calyx 5-cleft, without an involucel. Ovary 5–many-celled, with 3 (or rarely more) ovules in each cell. Capsule composed of 5 or more 2-valved 3- (rarely 4–6-) seeded carpels. Leaves cordate, rarely somewhat lobed. Peduncles axillary, solitary or rarely in pairs, 1–2- or many-flowered; sometimes (by the abortion of the upper leaves) in terminal racemes.

1. *A. Avicennæ* (Gærtn.): leaves orbicular-cordate, velvety-tomentose, acuminate, crenately toothed; peduncles shorter than the petiole; carpels about 15, 3-seeded, inflated, truncate, obliquely birostrate, hairy.—*Gærtn. fr.* 2. *p.* 251. *t.* 135. Sida Abutilon, *Linn.; Pursh, fl.* 2. *p.* 253; *Ell. sk.* 2. *p.* 162; *DC. prodr.* 1. *p.* 470; *Darlingt. fl. Cest. p.* 397.

Waste places and road-sides: introduced. July–Sept.—① Stem 2–5 feet high, with spreading branches. Leaves deeply cordate, 4–6 inches in diameter, with a slender abrupt acumination. Flowers usually solitary on axillary peduncles, sometimes 3 or more on short flowering branches which bear 1 or 2 small leaves. Corolla orange-yellow. Capsules large, the long beaks of the carpels spreading in a radiated manner.

2. *A. Nuttallii:* leaves cordate, acuminate, softly pubescent, irregularly serrate; peduncles axillary, 1-flowered, shorter than the petiole; carpels 8, pubescent, obtuse and pointless, 3-seeded.

On the Red River, *Nuttall!* Rocky hills in the prairies near Fort Towson, Arkansas, *Dr. Leavenworth!* — ♃ Stem 1½–2 feet high, somewhat branched. Leaves about 2 inches long; and 1½ inch wide; petiole shorter than the lamina. Capsule subglobose much longer than the calyx: carpels dehiscing from the summit to the base, partly separating when mature, obliquely truncate.

3. *A. Texensis:* leaves cordate-ovate, acute, softly pubescent, serrate; peduncles somewhat racemose at the upper part of the branches, 1-flowered; carpels 8, pubescent, acute, erect, 3-seeded.

Texas, *Drummond!*—♃ ? About 2 feet high, paniculately branched above, minutely tomentose. Leaves about an inch long; the petiole half as long as the lamina. Peduncles several on each branch, arising from the axils of small abortive leaves, forming a loose raceme. Capsule ovate; the carpels cohering, except at the summit.

9. SIDA. *Linn.; Lam. ill. t.* 578 *&* 579; *Cav. diss. p.* 5.

Sida & Napæa, *Linn.* Bastardia, *Kunth.*

Calyx 5-cleft, without an involucel, or rarely with 1 or 2 setaceous bracteoles. Ovary 5- or many-celled, with a single ovule in each cell. Capsule consisting of 5 or more 1-seeded, usually 2-valved carpels. Radicle (by the resupination of the seed) superior.

* *Pedicels short: leaves ovate, oblong, or linear.*

1. *S. spinosa* (Linn.): stem minutely pubescent; leaves ovate-lanceolate, serrate-dentate, with a subspinose tubercle at the base of the petiole; stipules setaceous; pedicels axillary, solitary or several together, mostly shorter than the petioles; carpels 5, birostrate.—*Michx.! fl.* 2. *p.* 43; *Pursh, fl.* 2. *p.* 452; *Ell. sk.* 2. *p.* 161; *DC. prodr.* 1. *p.* 460; *Darlingt.! fl. Cest. p.* 397.

Sandy fields and road-sides, New-Jersey! to Florida! and west to Arkansas! July–Aug.—① Stem 12–18 inches high, branching from near the base. Leaves 1–1½ inch long, obtuse or cordate at the base: petiole 6–8 lines long. Peduncles nearly solitary, but often appearing clustered from the short axillary flowering branches. Calyx hemispherical, 5-angled; segments broadly ovate, acuminate. Petals obovate, yellow. Carpels easily separating when ripe, strongly reticulated on the sides. Seeds dark purplish-brown, glabrous.

2. *S. fasciculata:* stems somewhat hairy; leaves linear, denticulate-serrate above, cordate at the base, those at the summit of the stem crowded; flowers sessile, terminal; carpels 5–7, scarcely rostrate, strongly reticulated and muricate.

Texas, *Drummond!*—♃ ? Stems about a span high, branching from the base. Leaves ¾ of an inch long and a line wide, mostly with a few serratures towards the apex, nearly glabrous above, stellately hirsute beneath: petiole about ¼ the length of the lamina. Calyx hemispherical; segments ovate, acute. Corolla not seen. Carpels short and broad, strongly roughened with projecting points.—This species greatly resembles a Sida figured in St. Hilaire's *Fl. Bras.*

2. *S. Elliottii:* stem slender, nearly glabrous; leaves linear or linear-oblong, denticulate-serrate, rather obtuse but not cordate at the base, nearly gla-

brous; petiole one-fifth the length of the lamina; stipules setaceous; peduncles axillary, 1-flowered, usually longer than the petiole; sometimes several at the summit of the branches; carpels 9–10, smoothish, slightly bimucronate.—S. gracilis, *Ell. sk.* 2. *p.* 159, not of *Richard.*

Sandy soils; South Carolina, *Elliott;* Georgia, *Dr. Boykin!* Florida, *Croom! Dr. Chapman!* May–Aug.—♃ Stem 2–4 feet high, with spreading branches. Leaves 1–2½ inches long, variable in breadth, often quite linear and 1–2 lines wide, sometimes 3–4 lines in breadth, serrate the whole length, with a few scattering hairs on both surfaces. Flowers an inch or more in diameter. Segments of the calyx broad, acuminate. Petals emarginate, orange-yellow. Styles united above the middle; stigmas capitellate. Carpels united in a depressed spherical head.—Much resembles S. angustifolia, but that species has 5 bicuspidate carpels.

S. acuta [illegible]

4. *S. glabra* (Nutt.): glabrous; leaves linear-oblong and lanceolate, incisely and unequally serrate, on short petioles; flowers axillary, aggregated; carpels about 10, bidentate. *Nutt. in jour. acad. Philad.* 7. *p.* 90.

β.? stem suffruticose, minutely pubescent; leaves rhombic-oblong; pedicels shorter than the petioles.

γ.? stem herbaceous, tall; leaves rhombic-oblong; pedicels longer than the petioles.

East Florida, *Mr. T. R. Peale.* β. Key West, *Rev. A. Bennett!* γ. Tampa Bay, Florida, *Dr. Burrows!*—Stem scarcely more than a span high. Leaves about an inch long. Stipules setaceous. Flowers small and yellow, at length so aggregated as to crowd the branches. Calyx very wide, angularly plaited; segments acuminate. *Nutt.*—β. Stem branching from the base, 8–12 inches long. Leaves about 1½ inch long and ¾ of an inch wide.—γ. Stem 2 feet or more in height. Leaves 2–4 inches long, and 1–1½ inch wide: petiole about 3 lines long, with a tumid articulation near the lamina. Peduncles 2–3 times as long as the petiole. Flowers yellow, nearly an inch in diameter: petals broadly cuneate, emarginate. Stigmas capitellate. Carpels 10, bimucronate.

5. *S. hispida* (Pursh): hispid; leaves lanceolate, serrate; peduncles solitary, axillary, as long as the petioles; exterior calyx filiform. *Pursh, fl.* 2. *p.* 452; *Ell. sk.* 2. *p.* 160.

Sandy soils, Georgia, *Lyon* (ex *Pursh*); South Carolina, *Elliott.* July–Aug.—♃? Stem 12–18 inches high, branching, stellately tomentose rather than hispid. Leaves somewhat rhomboidal, a little hairy on both surfaces: petioles 1–2 lines long. Stipules subulate, hairy, longer than the peduncles or petioles. Flowers on small axillary branches, so crowded and so nearly sessile that they appear fascicled. Calyx angular, hairy. Petals yellow, a little longer than the calyx. Fruit not seen.—There is no exterior calyx, but the stipules are very often found adhering to the calyx, as if connected with it. *Elliott.*—We have not seen this species.

* * *Peduncles elongated: leaves ovate, oblong or linear.*

6. *S. filicaulis:* stems very slender, hispid; leaves ovate-oblong, cordate at the base, serrate; petiole as long as the lamina; flowers axillary, solitary; carpels 5, 2-beaked.

Texas, *Drummond!*—①? Stem 2 feet long, clothed with spreading hairs. Leaves 5–7 lines long, 1½–2½ lines wide, rather obtuse. Stipules minute, setaceous. Peduncles nearly an inch long, very slender, articulated near the flower. Calyx hemispherical; segments broad, acuminate. Carpels pubescent, with 2 short rather erect horns.

7. *S. rhombifolia* (Linn.): minutely pubescent; leaves rhombic-oblong, toothed-serrate, cuneate and entire at the base; petioles short, with a slightly spinose tubercle at the base; peduncles much longer than the petioles; sti-

pules setaceous; carpels 10–12, with 2 subulate horns.—*Michx.! fl.* 2. *p.* 43; *Pursh, fl.* 2. *p.* 452; *Ell. sk.* 2. *p.* 161; *DC. prodr.* 1. *p.* 462.

Sandy soils, ~~South~~ Carolina (*Elliott*) and Georgia! to Florida! May–July—♃ Stem 1–2 feet high. Leaves 1–2 inches long, rather obtuse: petioles 2–3 lines long. Peduncles mostly axillary, much longer than the petioles, and sometimes longer than the leaves, articulated about half an inch below the flower. Calyx angular; segments very broad, with a short acumination. Petals obovate, yellow, 4–5 lines long.

* * * *Leaves cordate, not lobed.*

8. *S. **Hulseana**:* stem hispidly pilose; leaves orbicular-ovate, abruptly acuminate, tomentose beneath with a whitish velvety pubescence, roughish-tomentose above, crenate-dentate; peduncles axillary in the upper leaves, several-flowered; styles about 12.

Tampa Bay, Florida, *Dr. Hulse!*—Leaves 3 inches or more in diameter; the sinus deep and closed. Flowers an inch and a half in diameter, purplish: pedicels very short. Petals broadly obovate.—We have not seen the capsules of this species. It may belong to the genus Abutilon.

9. *S.? **obliqua*** (Nutt. mss.): leaves reniform-cordate, very obliqne at the base, rounded at the summit, scabrous-tomentose, strongly reticulately veined beneath, crenulate-dentate; peduncles axillary, solitary, 1-flowered, recurved after flowering; bracteoles 2, setaceous; petals oblong, stellately hairy externally; carpels 7, pointless.

On the Wallawallah River, *Nuttall!*—♃ Stem low, clothed with a roughish stellate pubescence. Leaves 1–1½ inch wide, the width exceeding the length: petioles nearly as long as the lamina. Flowers as large as in Malva rotundifolia. Peduncles rather shorter than the leaves. Calyx cleft below the middle, with 2 short deciduous bracteoles at the base. Styles united below: stigmas capitellate. Carpels pubescent, rather acute, but not horned.—Mr. Nuttall considered this plant a Malva; but finding the seeds to have the radicle superior, we refer it to Sida, notwithstanding the bracteolate calyx.

10. *S. **Californica*** (Nutt.! mss.): velvety-tomentose; leaves orbicular-cordate, laciniately toothed (scarcely lobed); the radical and lower cauline ones on very long petioles; flowers in a terminal raceme: stamineal column short, double; the exterior 5-lobed, antheriferous at the summit; styles about 7; stigmas long, simple.

St. Barbara, Upper California, *Nuttall!*—♃ About 15 inches high. Leaves 1½ inch in diameter; the uppermost slightly 5-lobed. Stipules subulate, small. Raceme naked: flowers on short pedicels, about 1½ inch in diameter. Calyx cleft below the middle; segments ovate-lanceolate. Petals purple, cuneate-obovate, somewhat emarginate. Stamineal column ½ the length of the petals. Capsules not seen.

* * * * *Leaves palmately lobed or many-cleft.*

11. *S. **Napæa*** (Cav.): leaves palmately 5-lobed, nearly glabrous; the lobes oblong, acuminate, toothed; peduncles many-flowered; carpels 10, acuminate. *DC.*—*Cav. diss.* 5. *p.* 277. *t.* 132. *f.* 1; *Pursh, fl.* 2. *p.* 453; *DC. prodr.* 1. *p.* 466. Napæa laevis, *Linn.; Lam. ill. t.* 579. *f.* 1.

Shady rocky places, Pennsylvania (*Muhlenberg*) to Virginia, *Pursh.* (v. v. in hort.) July.—♃ Stem 2–4 feet high glabrous. Leaves 4–5 inches in diameter, minutely pubescent, but not scabrous; lobes unequally and coarsely toothed, the middle one longest. Peduncles axillary in the uppermost leaves and at the summit of the branches, 2–4 flowered. Segments of the calyx roundish-ovate. Petals obovate, white, twice as long as the calyx. Carpels nearly glabrous.—We have seen no native specimens of this plant; but it is not uncommon in gardens.

12. *S. dioica* (Cav.): leaves palmately 7-lobed, scabrous; lobes lanceolate, incisely toothed; peduncles many-flowered, bracteate, somewhat corymbose; flowers diœcious; carpels 10, pointless. *DC.—Cav. diss.* 5. *p.* 278. *t.* 132. *f.* 2; *Pursh, fl.* 2. *p.* 453; *DC. prodr.* 1. *p.* 465. Napæa dioica & scabra, *Linn.*

In Virginia, *Linnæus:* Pennsylvania, *Muhlenberg.*— ♃ Leaves 7-9 lobed. Flowers crowded into heads; the fertile ones with abortive stamens. Carpels 8–10, in a depressed roundish head. *Willd.*—We have never seen this species.

13. *S. alcæoides* (Michx.): erect, herbaceous; lower leaves triangular-cordate, incised; upper ones palmately many-cleft; corymb terminal; calyx hispid. *Michx.! fl.* 2. *p.* 44; *DC. prodr.* 1. *p.* 474.

Barren oak-lands, Tennessee and Kentucky, *Michaux!*—Peduncles 3–6-flowered. Flowers about 1½ inch in diameter.—This species has, as Michaux remarks, the habit of Malva Alcea or M. moschata. The fruit is unknown.

14. *S. malvæflora* (DC.): radical leaves roundish, 9-lobed, truncate at the base; those of the stem 5-parted; segments linear, somewhat toothed; petioles of the lower leaves hispid; raceme terminal; segments of the calyx lanceolate, with a long acumination, carpels 7, pointless.—*DC. prodr.* 1. *p.* 474; *Lindl. bot. reg. t.* 1036; *Hook. fl. Bor.-Am.* 1. *p.* 108.

Plains of the Wahlamet and Umptqua Rivers, and on the N. W. Coast!—Stem 1–2 feet high. Leaves 3–4 inches in diameter, hirsute; the lobes of the uppermost ones nearly or quite entire. Racemes many-flowered: pedicels at first shorter, at length longer, than the subulate bracts. Segments of the calyx twice as long as broad. Petals purplish. Stamineal column somewhat double; the filaments at the summit of the exterior one approximated in pairs. Styles free at the summit: stigmas simple. Carpels oblong, acute, but not mucronate.

15. *S. Oregana* (Nutt.! mss.): stem nearly glabrous; radical leaves 7-lobed, the lobes incisely 3-toothed; those of the stem palmately 7-parted; the segments 3-lobed and incised, linear-lanceolate; segments of the calyx broadly ovate; raceme terminal; styles 8.

West side of the Rocky Mountains, *Nuttall!*—About 18 inches high. Radical leaves on very long petioles; cauline ones parted nearly to the base; the segments acute. Flowers numerous in a long raceme, nearly an inch in diameter, reddish-purple. Calyx about one-fourth the length of the corolla. Filaments of the stamineal column in a double series near the summit: outer series 5-lobed; each lobe composed of six united filaments. Styles unconnected the greater part of their length, hairy on the inner surface: stigmas simple. Fruit not seen.—Nearly allied to the preceding; but differs in the more divided leaves, smaller flowers, shorter and broader lobes of the calyx, &c.

16. *S. diploscypha:* hispid with spreading hairs; stem prostrate; leaves digitately 5-parted; segments narrowly 2–3-lobed; petiole twice as long as the lamina; flowers aggregated at the summit of the branches; bracts 3, long, filiform, at the base of the pedicels; calyx deeply 5-parted; stamineal column cyathiform, double; the exterior deeply 5-lobed, the lobes antheriferous at the summit; styles 7–9.

California, *Douglas!*—Upper part of the stem retrorsely hirsute. Leaves 1–2 inches in diameter, stellately pubescent. Flowering branches longer than the leaves, bearing at the summit 6–10 flowers as large as those of Malva sylvestris. Pedicels 2–4 lines long, with villous bracteoles at the base about ¾ of an inch in length. Segments of the calyx lanceolate, attenuated, with an oblong colored spot on the inside of each, near the base. Petals broadly cuneiform, slightly emarginate, cream-color tinged with purple. Stamineal column less than half the length of the petals: outer one hispid externally, lobed below the middle; the anthers in a single row, about 5 at the summit of each of the lobes: inner one irregularly lobed, rather shorter than the outer, and connate with it a little above the base. Styles plumose, included: stigmas simple. Fruit not seen.—A remarkable species resembling some Bombaceæ in its stamineal column.

17. *S. delphinifolia* (Nutt.! mss.): hispidly hirsute; leaves all pedately 7-parted; segments divided into linear rather obtuse lobes; flowers in a long leafy raceme; lobes of the calyx lanceolate; styles 7.

St. Barbara, Upper California, *Nuttall!*— ♃ Stem 8–12 inches high. Leaves about 1¼ inch in diameter, divided nearly to the base into narrow segments. Flowers about an inch in diameter. Petals obovate-cuneiform, purple, slightly emarginate. Styles hairy on the inside: stigmas simple. Fruit not seen.

18. *S. coccinea* (DC.): stellately pubescent and hoary; leaves on long petioles, deeply 3-parted; lateral segments 2-parted, the intermediate one 3-cleft; racemes terminal, leafy; styles 12.—*DC. prodr.* 1. *p.* 465; *Hook.! fl. Bor.-Am.* 1. *p.* 108. Malva coccinea, *Nutt.! gen.* 2. *p.* 81; *Bot. mag. t.* 1673; *Torr.! in ann. lyc. New-York*, 2. *p.* 171. Cristaria coccinea, *Pursh, fl.* 2. *p.* 453.

Plains of the Upper Missouri, above the confluence of the Platte, *Nuttall, James!* Plains of the Saskatchawan, *Drummond!*— ♃ About a span high, branching. Leaves 1–1½ inch in diameter; the lobes often obtuse, broadly linear. Raceme many-flowered: pedicels about 2 lines long. Flowers an inch in diameter, scarlet. Petals truncate and emarginate. Stamineal column half the length of the corolla. Stigmas capitellate. "Carpels about 6, compactly and circularly arranged." *Hook.*—The calyx is certainly not involucellate in this species; but we have not had an opportunity of ascertaining whether the seeds are like those of Sida.

19. *S. dissecta* (Nutt.! mss.): stellately pubescent and hoary; leaves 5-parted to the base; lateral segments 3-cleft, the middle one multifid; ultimate divisions narrowly linear; racemes terminal, leafy; styles 11.

Sources of the Platte near the Rocky Mountains, *Nuttall!*— ♃ Principal stem about 6 inches high, with a dense tuft of branches at the base. Leaves about ¾ of an inch in diameter; the divisions scarcely a line wide. Flowers numerous, scarlet: pedicels 1–2 lines long. Petals broadly obovate-cuneate, emarginate. Stigmas capitellate. Fruit not seen.—Very near the preceding; but smaller, the leaves much more divided, and with narrower segments.

S. crispa (Linn.) is recorded by some writers as a native of Carolina; but we strongly doubt whether it has been found native within the limits of our Flora.

10. HIBISCUS. *Linn.; Lam. ill. t.* 584; *DC. prodr.* 1. *p.* 446.

Calyx 5-cleft, or 5-toothed, surrounded by a many- or sometimes few-leaved involucel; the leaflets of which are usually distinct, but sometimes more or less united. Petals not auricled on one side. Stigmas 5. Ovary 5-celled; the cells with 3 or many ovules. Carpels 5, united into a 5-celled loculicidal capsule; margin of the valves not introflexed; the cells several- (rarely, by abortion one-) seeded.

§ 1. *Cells of the capsule* 1-*seeded.*—Pentaspermum, *DC.*

1. *H. Virginicus* (Linn.): scabrous-tomentose; leaves cordate-ovate, acuminate, unequally serrate-toothed; upper ones undivided, lower ones 3-lobed; pedicels longer than the petioles; flowers in paniculate racemes, nodding; column declined.—"*Jacq. ic. rar.* 1. *t.* 142;" *Michx.! fl.* 2. *p.* 46; *Ell. sk.* 2. *p.* 168; *DC. prodr.* 1. *p.* 447. H. clypeatus, *Walt. Car. p.* 177.

Borders of marshes, particularly near salt water, Long Island! to Florida! and west to New Orleans!— ♃ Stem 2–4 feet high. Leaves 2–2½ inches long, 1½ inch wide, those about the middle of the stem more or less 3-lobed. Flowers more than 2 inches in diameter: peduncles 1–2 inches long. Involucel of 8–9 subulate leaves. Petals rose-color, obovate-cuneate, hirsute externally on one side. Column very slender, shorter than the corolla, antheriferous above the middle. Capsule hispid, the angles very acute. Seeds glabrous: radicle inferior.

§ 2. *Cells of the capsule many-seeded: seeds glabrous: involucel* 4–6-*leaved: calyx spathaceous,* 5-*toothed, split on one side.*—Manihot, *DC.*

2. *H. Manihot* (Linn.): stem and petioles not prickly: leaves palmately divided; lobes 5–7, linear, acuminate, coarsely toothed; peduncles hispid; declined; leaves of the involucel ovate or lanceolate, persistent, entire; capsule very hirsute, acuminate.—*Michx.! fl.* 2. *p.* 45; *Pursh, fl.* 2. *p.* 457; *DC. prodr.* 1. *p.* 448.

Banks of the Mississippi, *Michaux! Drummond!* Introduced? — ♃ Leaves parted nearly to the base; the lobes often a foot in length, toothed toward the summit. Flowers 6 inches or more in diameter, sulphur-yellow, purple in the centre. Petals roundish, abruptly narrowed at the base. Involucel somewhat hispid. Calyx split on one side the whole length, with 5 short teeth at the summit. Column about one-third the length of the corolla, antheriferous nearly the whole length.

§ 3. *Cells of the capsule many-seeded: seeds glabrous: leaves of the involucel distinct, divaricately forked, or with a large tooth or other appendage: calyx not inflated.*—Furcaria, *DC.*

3. *H. aculeatus* (Walt.): very scabrous; lower leaves palmately 3–5-lobed; the lobes obovate, repand-toothed; flowers axillary at the upper part of the branches; peduncles short; calyx very hispid; leaves of the involucel linear, bidentate, with a leafy appendage on the back above the middle.—*Walt. Car. p.* 177. H. scaber, *Michx.! fl.* 2. *p.* 45; *Pursh, fl.* 2. *p.* 457; *Ell. sk.* 2. *p.* 169; *DC. prodr.* 1. *p.* 449.

Damp soils, usually near salt water, South Carolina, Georgia! Florida! and Alabama! June–Sept.— ♃ Stem 4–7 feet high, and, as well as the petioles and peduncles, rough with minute stellate recurved prickles. Lowest leaves (according to Walter) cordate and angular; upper ones deeply 3-lobed, the lateral lobes 2-cleft, rough with stellate rigid hairs, interspersed with minute prickles: petioles mostly longer than the lamina. Peduncles 2–3 lines long. Flowers as large as in Althæa rosea, sulphur-yellow, with a deep purple centre, often drying greenish. Leaves of the involucel 10–12, incurved; minutely 2- (sometimes 3-) dentate at the summit; appendage oblong, spreading. Sepals acutely triangular, the strong middle and marginal ribs armed with almost prickly hairs. Capsule ovate, hairy.—The name of Walter, although perhaps not so strikingly appropriate as that of Michaux, is necessarily restored.

§ 4. *Cells of the capsule many-seeded: seeds glabrous, or with a villous dorsal line: leaves of the involucel* 8–15, *distinct, entire.*—Abelmoschus, *DC.* [illegible] is original plant [illegible]

4. *H. Collinsiana* (Nutt. mss.): lowest leaves obtusely 5-lobed; upper ones pedately 5-parted; the lobes linear-oblanceolate, acuminate, coarsely toothed; petiole as long as the lamina; flowers on short pedudcles; leaves of the involucel 10–12; calyx spathaceous, 5-toothed, cleft on one side.

West Florida, *Mr. Ware* (fide *Nutt.*); Tampa Bay, *Dr. Burrows!*—Leaves 6–8 inches in diameter, sparsely hirsute; lowest ones angularly 5-lobed: upper ones parted nearly to the base; the 3 middle lobes about 6 inches in length and about an inch wide, often incisely toothed, acuminate; lateral lobes much shorter: petioles hispid. Peduncles about ¾ of an inch long, and as well as the involucel and calyx hispid. Corolla as large as in H. esculentus, yellow? (green in dried specimens.) Capsule not seen.—Nearly allied to H. esculentus; but differs in its deeply divided leaves. Mr. Nuttall informs us that he has seen the same species from Surinam.

5. *H. Moscheutos* (Linn.): leaves ovate, acuminate, serrate, often 3-lobed, whitish-tomentose beneath, somewhat scabrous-pubescent above; peduncles (1-flowered) and petioles often united.—*Cav. diss.* 3. *t.* 65. *f.* 1 *&* 2; *Michx.! fl.* 2. *p.* 47; *Bot. mag. t.* 882; *Pursh, fl.* 2. *p.* 455; *Ell. sk.* 2. *p.* 165; *DC. prodr.* 1. *p.* 450; *Hook. fl. Bor.-Am.* 1. *p.* 107. H. palustris, *Linn. & most of the preceding authors.*

Borders of marshes, particularly near the salt water, Canada! and throughout the United States! Aug.–Sept.— ♃ Stem 3–5-feet high, minutely tomentose. Leaves about 5 inches long and 3 wide, rather obtuse at the base, with a long acumination, often with 3 short abruptly acuminate lobes, velvety-tomentose beneath. Peduncles axillary, 2 inches long, articulated a little below the flower, often coalescing with the petiole to a considerable distance above the base. Flowers as large as in the common *Hollyhock*, rose-color, or sometimes nearly white, crimson at the centre. Petals obovate, retuse. Stamineal column ½ the length of the petals. Styles exserted. Capsule as large as in H. Syriacus.—From numerous observations, we are convinced that H. Moscheutos and H. palustris are not distinct species. It is not uncommon to find the peduncles and petioles both distinct and united on the same specimen.

6. *H. incanus* (Wendl.): leaves ovate, acuminate, obtusely serrate, whitish, velvety on both surfaces; peduncles axillary, 1-flowered, often confluent with the petiole at the base.—"*Wendl. hort. Herr.* 4. *t.* 24;" *Willd. sp.* 3. *p.* 807; *Pursh, fl.* 2. *p.* 456; *DC. prodr.* 1. *p.* 451.

Carolina, *Willdenow;* Middle Florida, *Dr. Chapman! Croom!* Red River, Louisiana, *Dr. Hale!*— ♃ Stem tall, minutely tomentose. Leaves often more or less cordate, not lobed, 4–6 inches long. Peduncles about as long as the petioles, jointed near the middle. Flowers very large "sulphur-yellow" (*Willd.* and so they are in our dried specimens), purplish at the centre.—Near the preceding species, but quite distinct.

7. *H. Carolinianus* (Muhl.): leaves cordate, ovate, acuminate, glabrous on both surfaces, sometimes slightly 3-lobed; peduncles axillary, 1-flowered; seeds hispid. *Ell.*—*Muhl. cat. p.* 65?; *Ell. sk.* 2. *p.* 168.

Wilmington Island, Georgia, *Elliott.*—Stem 4–6 feet high, glabrous. Leaves large (sometimes 6 inches long), obscurely 3-lobed when old; veins prominent on the under surface: petioles as long as the leaves. Peduncles 2–3 inches long, slightly adhering to the petiole. Involucel 12-leaved. Calyx somewhat scabrous. Petals purple, 4 inches long, glabrous outside, pubescent within. Capsule nearly globose, hairy on the inside. Seeds hispid with short rigid hair. *Elliott.*—A rare species, first described by Mr. Elliott, who raised it from seeds collected on Wilmington Island.

8. *H. militaris* (Cav.): glabrous; leaves hastately 3-lobed, acuminate, serrate; corolla tubular-campanulate; capsule ovate, acuminate, glabrous; seeds silky.—*Cav. diss.* 6. *p.* 352. *t.* 198, *f.* 2; *Willd. sp.* 3. *p.* 808; *Pursh, fl.* 2. *p.* 456; *Ell. sk.* 2. *p.* 168; *DC. prodr.* 1. *p.* 451; *Bot. mag. t.* 2385. H. hastatus, *Michx.! fl.* 2. *p.* 45. H. riparius, *Pers. syn.* 2. *p.* 254. H. Virginicus, *Walt. Car. p.* 187. "H. laevis, *Scop. del. insub.* 3. *t.* 27."
Banks of rivers, Pennsylvania, (*Pursh, Muhlenberg*) to Georgia! Ohio and Mississippi, *Michaux!* July–Aug.— ♃ Stem 3–4 feet high. Leaves 3–5 inches long, somewhat cordate, conspicuously lobed at the base in a hastate manner. Peduncles shorter than the petiole, jointed above the middle. Leaves of the involucel 12–14, linear-subulate, incurved. Corolla pale rose-color, with a deeper centre, about 2½ inches long, hairy on the outside toward the base.

9. *H. coccineus* (Walt.): glabrous; leaves palmately 5-parted; segments linear-lanceolate, acuminate, distantly serrate; calyx deeply 5-parted; corolla expanding; capsule glabrous, ovate, acute; seeds pubescent.—*Walt. Car. p.* 177. H. speciosus, *Ait. Kew.* 2. *p.* 456; *Michx.! fl.* 2. *p.* 47; *Bot. mag. t.* 360; *Pursh, fl.* 2. *p.* 456; *Ell. sk.* 2. *p.* 170; *DC. prodr.* 1. *p.* 451.
Damp soils, Georgia! Florida! July–Sept.— ♃ Stem 4–7 feet high. Leaves divided to the base; segments 5–8 inches long, tapering to a long narrow point. Peduncles articulated near the summit. Leaves of the involucel 12–15. Segments of the calyx lanceolate, with a long tapering point. Corolla bright scarlet: petals obovate, 4–5 inches long. Column as long as the petals.—We restore the prior name of Walter.

10. *H. grandiflorus* (Michx.): leaves coriaceous, cordate, 3-lobed, tomentose on both surfaces, hoary beneath; corolla expanding; capsule tomentose, somewhat truncated. *Michx.! fl.* 2. *p.* 46; *Pursh, fl.* 2. *p.* 455; *Ell. sk.* 2. *p.* 167; *DC. prodr.* 1. *p.* 451.
Around ponds, Georgia to Florida, and west to the Mississippi, *Michaux!* July–Sept.— ♃ Stem 5–7 feet high. Leaves very large, velvety like those of *Marsh Mallows*. Peduncles axillary. Petals flesh-color, red at the base, 5–6 inches long.

H. pallidus of Rafinesque, is merely H. Trionum, which is frequently found about habitations; but is hardly naturalized.

ORDER XXXIX. TILIACEÆ.* *Juss.*

Sepals 4–5, deciduous: æstivation valvate. Petals 4–5, hypogynous, rarely wanting. Stamens usually indefinite, distinct, hypogynous: anthers 2-celled, fixed by the middle, opening longitudinally. Torus often with 4 or 5 glands at the base of the petals. Ovary of 2–10 united carpels: styles united: stigmas as many as the carpels. Fruit a 2–5-celled capsule with several seeds in each cell, or coriaceous or drupaceous, sometimes by abortion 1-celled and 1–2-seeded. Seeds anatropous. Embryo in the axis of fleshy albumen: cotyledons flat and foliaceous, sometimes bent upon the radicle.—Trees or shrubs,

very seldom herbs. Leaves alternate, with deciduous stipules. Flowers axillary.

1. CORCHORUS. *Linn.; Lam. ill. t.* 478.

Sepals 4–5. Petals 4–5, rather shorter than the sepals, inserted under the ovary. Stamens indefinite, or rarely the number of the petals. Style very short, deciduous: stigmas 2–5. Capsule pod-like or roundish, 2–5-celled, loculicidal, with no central axis. Seeds usually numerous in each cell.—Shrubs or nearly herbaceous plants. Leaves undivided, serrate. Peduncles axillary or opposite the leaves, very short, 1–few-flowered. Flowers yellow.

1. *C. siliquosus* (Linn.): branching; leaves ovate or lanceolate, acute, equally serrate; capsules pod-shaped, linear, 2-valved, nearly glabrous.—*Plum. ic. t.* 103. *f.* 1; *Willd. sp.* 2. *p.* 1218; *DC. prodr.* 1. *p.* 504.

New Orleans, *Dr. Ingalls! Drummond!* Alabama, *Dr. Gates!* Also a native of the West Indies, &c.—Nearly herbaceous, glabrous or somewhat pubescent. Sepals and petals commonly 4. Stamens 14. The vernal flowers, according to Linnæus, have 4 sepals and 4 stamens; the autumnal 5 sepals and numerous stamens.

2. TILIA. *Linn.; Vent. mon. Til.; DC. prodr.* 1. *p.* 512.

Sepals 5. Petals 5. Stamens numerous, more or less pentadelphous; the central one in each parcel (in the North American species) transformed into a petaloid scale (nectary, *Linn.* staminodium, *Spach.*) Ovary globose, villous, 5-celled; the cells with 2 ovules. Fruit coriaceous or woody, subglobose, by abortion 1-celled, 1–2-seeded.—Trees, with cordate leaves and a tough fibrous bark. Flowers cymose, with the peduncle adnate to a large foliaceous bract.—*Linden* or *Lime-tree. Basswood.*

1. *T. Americana* (Linn.): leaves obliquely cordate, or truncate at the base, somewhat coriaceous, glabrous, abruptly acuminate; petals obtuse or truncate, crenate at the apex.—*Willd. sp.* 2. *p.* 1261; *Michx. f. sylv.* 2. *p.* 233. *t.* 131; *Bigel. fl. Bost. p.* 214. T. glabra, "*Vent. l. c. t.* 1. *f.* 1;" *Pursh, fl.* 2. *p.* 62; *Ell. sk.* 2. *p.* 2; *DC. prodr.* 1. *p.* 513; *Hook. fl. Bor.-Am.* 1. *p.* 108; *Darlingt. fl. Cest.* 1. *p.* 312. T. Canadensis, *Michx. fl.* 2. *p.* 306.

Woods, Canada! (lat. 52°) to Virginia, and along the Alleghany Mountains to Georgia. June.—A large and beautiful tree, often 60–70 feet high and 2–4 feet in diameter; the wood soft and white. Leaves 3–4 inches wide, coarsely and mucronately serrate: petioles 2 inches long. Peduncle 4–6 inches long, adnate the lower half of its length to a linear-oblong yellowish-green strongly-veined bract. Cymes compound, 12–18-flowered, pendulous. Flowers about half an inch in diameter. Sepals triangular-lanceolate, pubescent outside, woolly within. Petals longer than the sepals, yellowish-white. Staminodia obovate-lanceolate, exactly resembling the petals, but smaller. Style sometimes longer, sometimes shorter than the petals, hairy toward the base. Fruit the size of a large pea, nearly globose, covered with a short gray pubescence, usually perfecting but one seed.

2. *T. heterophylla* (Vent.): leaves glabrous and deep green above, very white and velvety-tomentose beneath, the veins dark-colored and nearly glabrous, with coarse mucronate serratures; petals obtuse, crenulate; stamino-

dia spatulate, entire; style hairy at the base.—" *Vent. l. c. p.* 16. *t.* 15?; *Pursh, fl.* 2. *p.* 63; *DC. prodr.* 1. *p.* 513.

Banks of the Ohio and Mississippi, *Pursh;* near Macon, Georgia, *Dr. Loomis!*—Leaves 4–8 inches in diameter, very oblique and more or less cordate, with a short abrupt acumination, somewhat shining above; the veins on the under surface very conspicuous in contrast with the white pubescence. Cyme few-flowered, loose. Style longer than the petals.

3. *T. alba* (Michx.): leaves glabrous above, whitish-pubescent beneath; the veins pale; serratures mucronately acuminate; petals emarginate; staminodia spatulate, entire; style nearly glabrous at the base.—*Michx. f. sylv.* 2. *p.* 237. *t.* 132. T. laxiflora, *Pursh, fl.* 2. *p.* 363? (not of *Michx. fl.*)

Woods, particularly along rivers, Pennsylvania to Maryland, and in the Western States, *Michaux, f.* Santee River, South Carolina, *Dr. Godine!* —Leaves 3–4 inches in diameter with a short abrupt acumination, cordate, somewhat unequal at the base; the under surface rather thinly pubescent, very pale, but scarcely white. Staminodia ⅔ the length of the petals. Filaments slightly pentadelphous.

4. *T. pubescens* (Ait.): leaves of nearly the same color on both surfaces, nearly glabrous above, pubescent beneath; serratures slightly mucronate; petals crenulate at the summit; style hairy at the base.—" *Vent. l. c. p.* 10. *t.* 3"; *Michx. f. sylv.* 2. *p.* 239. *t.* 133; *Pursh, fl.* 2. *p.* 363; *Ell. sk.* 2. *p.* 3. T. laxiflora, *Michx. fl.* 2. *p.* 306?

β. leptophylla (Vent.): leaves very thin and papyraceous. *Vent. l. c.; Pursh, l. c.*

Fertile soils, along the sea-coast of Carolina, to Florida! *Michaux, f. Elliott, Baldwin!* Kentucky, *Short!* Texas, *Drummond!* June.—A large tree. Leaves 3–4 inches in diameter, the under surface when young rather paler than the upper, but at length of nearly the same color; serratures broad and short.—There is great uncertainty respecting the synonymy of the last three species, owing to the imperfect manner in which they are described by most preceding authors. Indeed nearly all the characters which have been employed for distinguishing them are either inconstant or are common to them all. A careful examination of the flowers in the living plants may afford more certain marks of discrimination.

ORDER XL. MELIACEÆ. *Juss.*

Sepals 3–5, distinct or more or less united, imbricated in æstivation. Petals hypogynous, as many as, and longer than the sepals, alternate with them, often connivent or cohering at the base with each other or with the stamen-tube: æstivation valvate or imbricated. Stamens usually twice the number of the petals: filaments united into a tube, inserted outside the hypogynous often discoid torus: anthers sessile within the orifice of the tube. Ovary with usually the same number of cells as petals, each cell containing 1–2 ovules: styles and stigmas commonly united into one. Fruit drupaceous, baccate, or capsular, with as many cells as stigmas, or by abortion 1-celled; when dehiscent, loculicidal. Seeds mostly anatropous, sometimes arilled, never winged or flat: albumen thin and fleshy, or none.—Trees or shrubs. Leaves alternate, without stipules, simple or compound.

1. MELIA. *Linn.; Lam. ill. t.* 372.

Calyx small: sepals 5, united below. Petals oblong, spreading. Stamen-tube 10-cleft at the apex, with 10 anthers in the throat; the segments 2–3-parted. Ovary seated on a short disk, 5-celled, with 2 ovules in each cell, one above the other. Style columnar, breaking off from the top of the ovary: stigma 5-lobed. Drupe ovate, with a 5-celled bony nut; cells 1-seeded. Embryo enclosed within a thin fleshy albumen: cotyledons foliaceous.—Trees, with bipinnate leaves: leaflets toothed. Flowers in axillary panicles.

1. *M. Azedarach* (Linn.): leaves deciduous; leaflets about 5 together, glabrous, obliquely ovate-lanceolate, acuminate; petals (lilac) nearly glabrous.—*Lam. l. c.; Cav. diss.* 7. *p.* 363, *t.* 207; *Ell. sk.* 1. *p.* 475; *Ad. Juss. Meliac. in mem. mus.* 19. *t.* 13; *Audubon, birds of Amer. t.* 62.
Naturalized in the Southern States! Introduced from Asia. April.—Trunk 20–40 feet high, often 3 feet in diameter. Leaves deciduous late in autumn.—Bark of the root anthelmintic and somewhat narcotic. *Ell.*—Dr. James found this tree on the Canadian, where he thinks it to be a native.—*Pride-of-India.*

ORDER XLI. CEDRELACEÆ. *R. Br.*

Sepals 4–5, distinct or united. Petals as many as the sepals and alternate with them, distinct, sometimes unguiculate: æstivation twisted or convolute. Stamens twice the number of the petals; those opposite the petals shorter and sometimes sterile or deficient: filaments either broad and flat and united into a tube, or subulate and distinct, inserted with the petals on the hypogynous disk: anthers introrse, at length versatile. Ovary with as many cells as petals (rarely with fewer), supported or surrounded by the discoid torus, with several ovules in each cell: styles and stigmas united into one; the latter usually broad and discoid, 3–5-angled or lobed. Fruit a woody 3–5-celled, 3–5-valved capsule, with septicidal dehiscence; the valves separating from the dissepiments, which remain attached to the thick axis. Seeds anatropous, many or few in each cell, imbricated in 2 rows near the inner angle, flat and winged, not arilled: albumen thin and fleshy or none. Embryo with large foliaceous cotyledons, and a very small radicle.—Trees, with very hard and durable, usually fragrant and resinous wood. Leaves alternate, pinnate, exstipulate. Flowers in terminal panicles, perfect, or diclinous by the abortion of the anthers or ovary.

1. SWIETENIA. *Linn.; Ad. Juss. in. mem. mus.* 19. *p.* 249, *t.* 11.

Calyx short, obtusely 5-cleft. Petals 5, reflexed. Filaments 10, united into a subcampanulate 10-toothed tube: anthers included in the tube, alternate with the teeth, attached by the middle, apiculate. Style short: stigma discoid, 5-radiate. Ovary ovoid, surrounded at the base by an annular disk, 5-celled, with about 12 ovules in each cell. Capsule ovoid, 5-celled, dehiscing from the base upward, with 5 septifragal valves; the very thick and woody sarcocarp at length separable from the endocarp; the axis large, persistent, 5-angled above, 5-winged below with the dissepiments. Seeds suspended from the summit of the axis, about 12 in each cell, imbricated in two rows, rather flat; the thickened and spongy integument expanded above into an oblong wing, which is traversed by the filiform funiculus. Embryo transverse: radicle very short, looking towards the side of the cell: cotyledons conferruminate and confounded with the fleshy albumen.—A large tree, with reddish-brown wood. Leaves abruptly pinnate: leaflets small, somewhat inequilateral. Panicles axillary or somewhat terminal, loosely-flowered. *Ad. Juss.*—*Mahogany.*

S. Mahogoni (Linn.)—*Cav. diss.* 7. *p.* 365, *t.* 209; *Catesb. Car. t.* 81; *DC. prodr.* 1. *p.* 624; *Ad. Juss. l. c.* Cedrus Mahogoni, *Mill.*

The *Mahogany* is mentioned in Muhlenberg's catalogue as a doubtful native of Florida. We have seen, in the herbarium of the late Mr. Croom, a capsule from a collection made in Southern Florida by the late Dr. Leitner, who considered the tree to which it belonged to be the true Mahogony.—The figure of Gærtner (*fruct.* 2. *t.* 96.) differs in several points from S. Mahogoni, as is noticed by Ad. Jussieu, and probably represents some other plant.

ORDER XLII. VITACEÆ. *Juss.*

Ampelideæ, *Rich.*; *Kunth*, *&c.*

Calyx minute, nearly entire, or 5-toothed. Petals 4–5, inserted upon the outside of an annular disk, inflexed and valvate in æstivation, distinct, or cohering above and calyptriform, caducous. Stamens as many as the petals and opposite them, inserted on the surface of the disk: filaments distinct or slightly cohering at the base, or attached to the outside of a 5-lobed urceolus: anthers ovate, versatile. Ovary 2-celled, with 2 erect collateral ovules in each cell: style short or none: stigma simple. Fruit a globose mostly pulpy berry, often by abortion 1-celled, 1–few-seeded. Seeds anatropous, erect, with a hard testa. Embryo much shorter than the horny or fleshy albumen: radicle slender: cotyledons lanceolate or subulate.—Usually climbing shrubs. Leaves simple or compound; the lower ones opposite; the upper alternate, opposite the racemes or thyrsoid panicles, which are sometimes changed into tendrils. Flowers greenish and inconspicuous, occasionally polygamous.

1. VITIS. *Linn.*; *Gærtn. fr. t.* 106; *W. & Arn. prodr. Ind. Or.* 1. *p.* 124.

Vitis & Cissus, *Linn.* *&c.*

Calyx nearly entire. Petals 4–5, distinct and spreading, or united at the apex, but distinct at the base, and falling off like a calyptra. Torus elevated

in the centre, and surrounding the lower part of the ovary, with which it is incorporated, girt at the base by a short ring (expansion of the torus) upon which the stamens are inserted. Ovary partly enclosed within the torus, 2- (or occasionally 3-) celled, with 2 ovules in each cell. Berry 1–2- (or occasionally 3-) celled, 1–4-seeded. Peduncles usually changed, in whole or in part, into tendrils. *Arn.*

§1. *Petals* 4 (*rarely* 5), *usually distinct at the apex: stamens* 4 (*rarely* 5): *style usually as long as the ovary: stigma minute. Peduncles either wholly floriferous or changed into tendrils.*—CISSUS, Linn.

1. *V. bipinnata:* leaves bipinnate, glabrous; leaflets incisely serrate; flowers pentandrous; berry 2-celled; cells 1–2-seeded.—V. arborea, *Willd. sp.* 1. *p.* 1183. Ampelopsis bipinnata, *Michx.! fl.* 1. *p.* 160; *DC. prodr.* 1. *p.* 633. Cissus stans, *Pers. syn.* 1. *p.* 143; *Pursh, fl.* 1. *p.* 170. C. bipinnata, *Ell. sk.* 1. *p.* 304; *Nutt. gen.* 1. *p.* 144.

Damp rich soils, near rivers, Virginia! to Georgia! west to Arkansas! June–July.—Stem upright or somewhat twining, glabrous. Lower leaves sometimes decompound: leaflets an inch long, ovate or rhombic-ovate, sometimes cordate; the veins beneath pubescent and slightly connected at their axils by a ciliate membrane. Panicle short, spreading, and apparently twice bifid, without tendrils. Petals greenish-white, expanding. Torus somewhat turbinate, adhering to the lower half of the ovary. Style conical. Berry globose, depressed, as large as a small pea, blackish when ripe, slightly hairy, one of the cells usually 2-seeded, the other one-seeded. Seeds with 2 deep depressions on one side.

2. *V. incisa* (Nutt. mss.): leaves trifoliolate, thick and somewhat fleshy; leaflets incisely toothed or lobed, cuneate at the base; flowers tetrandrous and tetrapetalous; berry globose-obovate, 1-celled, 1-seeded.

Prairies and copses, Texas and Arkansas, *Dr. Leavenworth!* Arkansas, *Nuttall!* July—A vine, climbing by numerous tendrils to the height of 4–5 feet: stem woody, and as well as the branches, warty. Petioles about an inch long. Leaves pale green and very glabrous on both surfaces; the lowest ones 3-lobed or cordate at the base; upper ones trifoliolate: leaflets 1–2 inches long, sometimes 2–3-lobed. Panicle somewhat corymbed, or compoundly umbellate. Calyx 4-toothed. Petals pale green, connected. Torus hemispherical; the border obscurely toothed. Style conspicuous, rather slender. Berry the size of a small pea, black, shining. Seed with 2 deep pits at the base, so that when it is cut transversely the albumen appears to be 2-celled.—The leaves, leaflets, and flowers are so deciduous that it is almost impossible to dry the plant so as to prevent its falling to pieces.

3. *V. indivisa* (Willd.): leaves simple, cordate or truncate at the base, somewhat 3-lobed, pubescent on the nerves beneath; flowers pentandrous and pentapetalous; berry 1-celled, 1–2-seeded.—*Willd. baum.* 538, *ex DC. prodr.* 1. *p.* 633. Ampelopsis cordata, *Michx.! fl.* 1. *p.* 159; *DC. l. c.* Cissus Ampelopsis, *Pers. syn.* 1. *p.* 142; *Pursh, fl.* 1. *p.* 170; *Ell. sk.* 1. *p.* 305.

Swamps, Southern States! west to Louisiana! and Arkansas! June.—Stem long, climbing, glabrous.—Leaves 3–4 inches broad, coarsely serrate; the points of the serratures glandular. Panicles apparently twice or thrice bifid, with spreading branches, without tendrils. Calyx very obscurely toothed. Ovary surrounded with a cup-shaped torus, somewhat globose; ovules 2. Style tapering: stigma small. Berry a little larger than a pepper-corn, seldom perfecting more than a single seed.

§ 2. *Petals 5, mostly united at the apex: stamens 5: style short, conical: stigma dilated. Peduncles sometimes partly changed into tendrils: flowers in the North American species polygamous.*—VITIS, Linn.

4. *V. Labrusca* (Linn.): leaves broadly cordate, somewhat lobed and angular, repandly toothed, whitish-tomentose beneath, with somewhat ferruginous veins; fertile racemes oblong, compact, rather few-flowered; berries large.—*Michx.! fl.* 2. *p.* 230; *Pursh, fl.* 1. *p.* 169; *Torr.! fl.* 1. *p.* 264; *Ell. sk.* 2. *p.* 689; *DC. prodr.* 1. *p.* 634; *Darlingt. fl. Cest. p.* 150; *Hook. fl. Bor.-Am.* 1. *p.* 115.

Woods and thickets, Canada! to Georgia; west to Arkansas! and Texas! June.—Stem very long, straggling over bushes, or climbing the highest trees; the branches clothed with a ferruginous pubescence. Leaves 4–6 inches or more in diameter, often distinctly 3-lobed, short, mucronate, densely tomentose beneath; the tomentum usually whitish or gray, but sometimes tawny, particularly on the veins; teeth short, mucronate. Racemes somewhat compound; the branches short and umbelled. Petals yellowish-green. Berries 6–7 lines in diameter, globose, usually very dark purple when ripe, but sometimes amber-color, or greenish-white, of a strong musky flavor, and filled with a tough pulp.—*Fox-Grape* of the Northern States. Several esteemed varieties are known in the gardens; such as the *Isabella*, *Schuylkill* or *Alexander's*, the *Catawba*, and *Bland's Grape*, which have doubtless been produced from the seeds of this species.

5. *V. æstivalis* (Michx.): leaves broadly cordate, often 3–5-lobed or sinuately palmate, coarsely and unequally toothed, sparsely ferruginous-tomentose beneath; fertile racemes long, compound; berries small. *Darlingt.*—*Michx.! fl.* 2. *p.* 230; *Pursh, fl.* 1. *p.* 169; *Torr.! fl.* 1. *p.* 265; *Ell. sk.* 2. *p.* 688; *DC. prodr.* 1. *p.* 634; *Darlingt. fl. Cest. p.* 151. V. vinifera Americana, *Marsh. arbust. p.* 165. V. intermedia, *Muhl. cat. p.* 26. V. palmata, *Vahl.?*

Woods and banks of rivers, Connecticut! to Florida! west to Arkansas! June.—Stem very long. Leaves 4–7 inches wide, often deeply lobed, with the sinuses rounded, the lower surface, particularly in the young state, clothed with a reddish cobweb-like pubescence, when old somewhat glabrous. Sterile racemes usually large and much compound, frequently bearing one or more tendrils from the base. Petals cohering at the summit. Berries 3–4 lines in diameter, deep blue, of a pleasant flavor, ripe in ~~October.~~—*Summer Grape.*

[illegible]

3. *V. cordifolia* (Michx.): leaves cordate, acuminate, somewhat equally toothed, glabrous on both sides; racemes loose, many-flowered; berries small.—*Michx.! fl.* 2. *p.* 231; *Pursh; fl.* 1. *p.* 169; *DC. prodr.* 1. *p.* 364. V. vulpina, *Torr.! fl.* 1. *p.* 264 (not of *Willd.*); *Hook. l. c.*

Thickets along rivers, Canada! to Florida! west to Arkansas! June.—Stem 10–20 feet long. Leaves thin, 3–6 inches in diameter, often slightly 3-lobed, and rarely sinuate, pubescent on the veins when young, glabrous when old; the teeth broad and mucronate. Berries nearly black when mature, about ¼ of an inch in diameter, ripening late in autumn, acerb, but tolerably well flavored after having been touched by frost.—*Winter Grape. Frost Grape.*

4. *V. riparia* (Michx.): leaves unequally and incisely toothed, somewhat 3-lobed; the petioles, veins, and margins pubescent; racemes loose, fruit small.—*Michx.! fl.* 2. *p.* 231; *Pursh, fl.* 1. *p.* 169; *DC. prodr.* 1. *p.* 635. V. odoratissima, *Donn.*

Thickets along rivers, Canada! to Virginia! Western States! Arkansas! —Stem long. Leaves 4–6 inches in diameter, thin; teeth very coarse, with a long acumination. Berry 3–4 lines in diameter, dark purple or amber-color when mature.—*Winter Grape.*

5. *V. vulpina* (Linn.): branches minutely verrucose; leaves cordate, lucid on both surfaces, somewhat 3-lobed, coarsely toothed, the teeth not acuminate; racemes composed of numerous capitate umbels; berries large.—*Willd. sp.* 1. *p.* 1181; *Walt. Car. p.* 243. V. rotundifolia, *Michx.! fl.* 2. *p.* 231; *Pursh, fl.* 1. *p.* 169; *Ell. sk.* 2. *p.* 687; *DC. prodr.* 1. *p.* 635.
Banks of rivers, Virginia! to Florida!—Stem often very long, climbing the highest trees; the bark smooth. Leaves 2–3 inches in diameter; the lower surface more shining than the upper; sinus deep, but rather acute. "Fruit 7–8 lines in diameter, covered with a coriaceous integument, the flavor not unpleasant." *Elliott.*—*Fox-Grape* of the Southern States; also called *Bullet-* or *Bull-Grape.* It appears to be the original V. vulpina of Linnæus.

2. AMPELOPSIS. *Michx. fl.* 1. *p.* 159.

Calyx entire. Petals 5, distinct, spreading. Torus without a ring. Ovary 2-celled; with 2 ovules in each cell: style very short, conical. Berry 2-celled; the cells 1–2-seeded.—A shrubby vine. Leaves digitately 5-foliolate. Flowers perfect, in spreading corymbose panicles.

A. quinquefolia (Michx. l. c.)—*Hook. fl. Bor.-Am.* 1. *p.* 114. A. hederacea, *DC. prodr.* 1. *p.* 633; *Darlingt. fl. Cest. p.* 153. Vitis quinquefolia, *Lam.* V. hederacea, *Willd. sp.* 1. *p.* 1182. Hedera quinquefolia, *Linn.* Cissus hederacea, *Pers. syn.* 1. *p.* 143; *Pursh, fl.* 1. *p.* 170; *Torr.! fl.* 1. *p.* 266; *Ell. sk.* 1. *p.* 305.
β. hirsuta: leaves pubescent on both sides; leaflets ovate.—A hirsuta, *Donn.; DC. prodr.* 1. *p.* 633. Cissus hederacea *β.* hirsuta, *Pursh, l. c.*
Borders of woods, and along fences, Canada! to Georgia, and Western States. *β.* Alleghany Mountains, *Pursh.*—Stem climbing to a great height and spreading extensively, attaching itself to trees and walls by expansions of the extremities of the tendrils. Leaves on long petioles: leaflets petiolulate, oblong, acuminate, coarsely serrate or toothed above the middle, glabrous. Panicle many-flowered, consisting of about 3 primary branches, which are compoundly divided; the ultimate divisions, somewhat umbellate. Flowers small, yellowish-green. Calyx very slightly crenate. Petals at first somewhat cohering, at length spreading. Berry about as large as a small pea, dark blue; the peduncles and pedicels bright crimson. Foliage crimson in autumn.—*Virginian Creeper. American Ivy.*

ORDER XLIII. ACERACEÆ. *Juss.*

Sepals 5, or rarely 4–9, more or less united, colored: æstivation imbricated. Petals as many as sepals and alternate with them, inserted round an usually lobed hypogynous disk, sometimes none. Stamens inserted on the disk, usually 8 (sometimes 3–12), distinct: anthers introrse or versatile. Ovary 2-lobed, composed of two united carpels, each containing 2 collateral ovules: styles more or less combined, stigmatose on the inside. Fruit composed of 2 indehiscent samaroid carpels, finally separable from the filiform axis: the wing thickened at the lower margin. Seeds 1–2, erect, with little or no albumen. Embryo curved, or nearly straight, with wrinkled foliaceous cotyledons variously folded upon each other.—Trees or shrubs, with opposite, palmately lobed or pinnately 3–5-foliolate, exstipulate leaves. Flowers lateral or terminal, often by abortion polygamous or diœcious.

1. ACER. *Mœnch; DC. prodr.* 1. *p.* 593.

Flowers mostly polygamous. Petals colored like the sepals, often wanting. Stamens 7–10, rarely 5.—Leaves simple. The sap of many species contains sugar.—*Maple.*

* *Flowers in racemes terminating the leafy branches, appearing after the evolution of the leaves.*

1. *A. Pennsylvanicum* (Linn.): leaves subcordate, finely and acutely doubly serrate, 3-lobed at the extremity; lobes with a slender serrate acumination; racemes nodding; flowers large; petals obovate; fruit glabrous, with large diverging wings.—*Linn. syst.* 1. *p.* 675; *Michx.! fl.* 2. *p.* 252; *Ell. sk.* 1. *p.* 451; *Torr.! fl.* 1. *p.* 397; *Hook. fl. Bor.-Am.* 1. *p.* 111. A. striatum, *Lam. dict.* 2. *p.* 381; *Michx. f. sylv.* 1. *t.* 45; *DC. prodr.* 1. *p.* 593; *Spach, in ann. sci. nat.* (2. *ser.*) 2. *p.* 162. A. Canadense, *Duham. arb.* 1. *t.* 12; *Marsh. arbust. p.* 4.

Canada! (lat. 51°) to the Alleghany Mountains in Georgia, and Kentucky! abundant between lat. 43° and 45°. May.—A shrub or very small tree, with a smooth green bark marked with stripes: the wood of no value. Flowers yellowish-green. Leaves rarely somewhat 5-lobed, at length glabrous.—*Striped Maple. Moose-wood. Dog-wood.*

2. *A. spicatum* (Lam.): leaves pubescent beneath, subcordate, coarsely serrate, 3- or somewhat 5-lobed; lobes with an entire acumination; racemes erect, slightly compound; petals linear-spatulate; fruit nearly glabrous, with slightly diverging wings.—*Lam. dict.* 2. *p.* 381 (1786); *DC. prodr. l. c.; Spach, l. c.* A. montanum, *Ait. Kew.* 3. *p.* 435 (1789); *Michx.! l. c.; Michx. f. sylv. t.* 47; *Ell. sk.* 1. *p.* 452; *Hook. l. c.* A. Pennsylvanicum, *DuRoi, harbk. t.* 2; *Wang. Amer. t.* 12. *f.* 30.

Cool rocky places! with the same range as A. Pennsylvanicum: uncommon south of lat. 41°.—May-June.—Shrub 6–10 feet high. Leaves slightly lobed, at length somewhat rugose. Flowers small, greenish. Raceme many-flowered. Fruit often reddish.—*Mountain Maple.*

3. *A. macrophyllum* (Pursh): leaves large, very deeply 5-lobed; lobes oblong or slightly cuneiform, entire or sinuately 3-lobed, the margins somewhat repand; racemes nodding; flowers rather large; petals obovate; fruit hispid, with elongated slightly diverging glabrous wings.—*Pursh, fl.* 1. *p.* 267; *DC. prodr.* 1. *p.* 594; *Hook.! fl. Bor.-Am.* 1. *p.* 112, *t.* 38.

Oregon! common between lat. 40° and 50°, along the alluvial banks of rivers. April-May.—Trunk 40–90 feet high, 6–16 feet in circumference, with widely spreading branches. Leaves [at length nearly glabrous] sometimes nearly a foot broad. Stamens 9–10: filaments hairy below. Carpels sometimes 3. Racemes elongated, the pedicels often aggregated (compound below, *Pursh*). Flowers yellow, fragrant. Sap as abundant as in any species except A. saccharinum: the wood soft but beautifully veined. *Douglas, in Hook.* "The wood is whitish, and resembles our curled maple." *Nutt.*

** *Flowers in pedunculate umbel-like corymbs, terminating the leafy branches, appearing with the leaves.*

4. *A. circinatum* (Pursh): leaves cordate, 7–9-lobed, the nerves all radiating directly from the apex of the petiole; lobes very acutely serrate, with a slender acumination; corymb few-flowered; petals ovate or linear, shorter than the calyx; fruit glabrous, with oblong divaricate wings.—*Pursh, fl.* 1. *p.* 266; *Hook. fl. Bor.-Am.* 1. *p.* 112, *t.* 39; *Nutt. in jour. acad. Philad.* 7. *p.* 16, excl. syn.

On the Great Rapids of the Oregon, *Lewis* ex *Pursh*, *Nuttall!* and N. W. Coast between lat. 43° and 49°, *Douglas*, *Scouler!* "Confined, like the preceding, to the woody mountainous country that skirts the shores, where it forms almost impenetrable thickets; the pendulous and crooked branches often taking root." *Douglas*, in *Hook.* April–May.—Trunk 20–40 feet high; bark smooth; wood fine, white, close-grained, susceptible of a good polish. *Douglas.* [" like that of the Red Maple, and presents a beautiful curled texture." *Nuttall.*] Leaves as large as those of A. rubrum, with a woolly tuft at the apex of the petiole; the veins hairy, but in old leaves nearly glabrous; lobes oblong or ovate-lanceolate, very acute. Sepals purple. Petals nearly [illegible] - white. Fruit with thin straight wings, which are so divaricate as to form right angles with the peduncle; the lower margin scarcely thickened.

5. *A. glabrum* (Torr.): leaves nearly orbicular, truncate or subcordate at the base, 3–5-lobed; lobes short and broad, acutely incised and toothed; flowers . . . ; fruit glabrous, the wings very short and broad (somewhat obovate), rather diverging.—*Torr.! in ann. lyc. New-York*, 2. *p.* 172.

In the Rocky Mountains about lat. 40°, *Dr. James!*—A small shrub. Leaves nearly similar to those of the common Currant in size and shape, glabrous, commonly 3-lobed, with very acute and narrow sinuses which hardly reach to the middle of the leaf; lobes broader than long, obtuse, often somewhat 2–3-lobed. Flowers not seen. Peduncles in fruit very short, 2–3-flowered. Wings of the fruit about the size of those of A. campestre, or a little shorter, but broader in proportion and more obtuse.

6. *A. tripartitum* (Nutt.! mss.): "leaves with a subreniform-orbicular circumscription, 3-cleft or 3-parted; segments incisely toothed; the middle one cuneiform, often slightly lobed, the lateral ones somewhat rhomboid; racemes corymbose; fruit glabrous, with very short and broad cuneate-oval diverging wings.

"On Bear-Ridge, Rocky Mountains, lat. 40°, near the line of Upper California.—A shrub with whitish smooth branches. Leaves about the size of those of the common Currant, usually 3-parted to the base, sometimes only cleft half-way down; the central segment broadly cuneiform, and, as well as the lateral ones, slightly 3-lobed. Calyx about 8-parted; segments oblong. Fruit small, very similar to that of A. glabrum, to which it is nearly allied." *Nutt.*—Notwithstanding the difference in the division of the leaves, we apprehend that this and the preceding may prove to be forms of the same species.

*** *Flowers in nearly sessile umbel-like corymbs, with very long filiform pedicels, appearing with the leaves; the fertile corymbs terminating the branches; the infertile from lateral leafless buds.*

7. *A. grandidentatum* (Nutt.! mss.): leaves slightly cordate or truncate at the base, rather deeply 3-lobed, the sinuses broad and rounded; lobes slightly acute, with a few sinuous indentations; corymb nearly sessile, few-flowered; the pedicels long and nodding; fruit glabrous, with small diverging wings." *Nutt.*—A. barbatum, *Dougl. in Hook. l. c.*?

"Rocky Mountains, on Bear River of Timpanagos.—A shrub or low tree, with pale smooth branches. Leaves smaller than in A. saccharinum, glabrous and somewhat shining above, minutely pubescent especially on the veins beneath; lobes short, not in the least acuminate; the middle one with two blunt teeth on each side; the lateral with a single large diverging denture. Pedicels pubescent above. Fruit turgid, glabrous; the wings less than an inch long, semioval, slightly attenuated below, somewhat divergent." *Nutt.* —To this species we refer with little hesitation A. barbatum, *Dougl.* (not of *Michx.*), which was found in "Valleys near springs on the west side of the Rocky Mountains, near the sources of the Columbia." We have not seen the flowers, but there is little doubt that the inflorescence is the same as in A. saccharinum.

8. *A. saccharinum* (Linn.): leaves truncate and subcordate at the base (whitish and minutely pubescent or glabrous beneath), 3–5-lobed, with the sinuses obtuse; lobes with a slender acumination, coarsely and sparingly sinuate-toothed; sepals bearded at the apex within; petals none; fruit glabrous, on long nodding pedicels; the wings dilated above, suberect or slightly diverging.—*Wang. Amer. p.* 36, *t.* 11; *Michx. fl.* 2. *p.* 252; *Pursh, fl.* 1. *p.* 266; *Michx. f. sylv.* 1. *t.* 42; *Ell. sk.* 1. *p.* 450; *Torr.! fl.* 1. *p.* 397; *Hook. fl. Bor.-Am.* 1. *p.* 113. A. saccharum, *Marsh. arbust. p.* 4.

β. nigrum: leaves pale green beneath, the veins of the lower surface and petioles minutely villous-pubescent; wings of the fruit a little more diverging.—A. nigrum, *Michx. f. sylv.* 1. *t.* 43.

In rather dry woods, Canada! to the mountains of Georgia! west to Arkansas! and the Rocky Mountains. April–May.—Tree 50–80 feet high; the trunk sometimes 2–3 feet in diameter; the wood compact and close-grained: the sap contains sugar. Leaves 3–5 inches in length, generally wider than long, on slender petioles, green and slightly lucid above, whitish and at first very pubescent, at length minutely pubescent or nearly glabrous, except on the veins beneath; lobes diverging, usually three principal ones with two small entire ones at the base. Flowers pale greenish-yellow, on pendulous villous pedicels. Wings of the fruit about an inch long, semi-obovate.—*Sugar-Maple.*—Two accidental forms of arrangement of the woody fibre, &c. furnish the *Curled-Maple* and the *Birds-eye-Maple* of cabinet-makers. We are unable clearly to distinguish the *Black Sugar-Maple* from the present species.

**** *Pedicels in fascicles, evolved from lateral aggregated leafless buds: flowers preceding the leaves.*

9. *A. dasycarpum* (Ehrh.): leaves subcordate or often truncate at the base (white beneath), deeply 5-lobed, with the sinuses rather obtuse; lobes acute, unequally incised and toothed, entire towards the base; pedicels short and thick; petals none; fruit tomentose when young, nearly glabrous when old, with very large upwardly dilated somewhat diverging wings.—"*Ehrh. beitr.* 4. *p.* 24"; *Willd. sp.* 4. *p.* 985; *Nutt.! gen.* 1. *p.* 252; *Ell. sk.* 1. *p.* 449; *Torr.! fl.* 1. *p.* 396; *Hook. fl. Bor.-Am.* 1. *p.* 113. A. eriocarpum, *Michx.! fl.* 2. *p.* 253; *Desf. in ann. mus.* 7. *t.* 25; *Michx. f. sylv.* 1. *t.* 40; *DC. prodr.* 1. *p.* 595; *Darlingt. fl. Cest. ed.* 2. *p.* 245.

Banks of rivers, Maine and Vermont! to the upper and middle parts of Georgia! west to Lake Michigan and Arkansas; rare north of lat. 43°; most abundant in the Western States. March–April.—Trunk low, 2 (in the Western States sometimes 8–9) feet in diameter: wood white and soft, not durable: sap less sweet than that of the Sugar-Maple. Leaves on long petioles, at first tomentose, finally glabrous, as broad as long; the lobes often somewhat 3-lobed. Pedicels in flower 2–3 lines, in fruit an inch, long. Flowers small, pale yellowish-purple. Stamens 3–6. Ovary with no glands at the base. Wings of the fruit 2–3 inches long when mature, slightly falcate.

Seeds large. Embryo nearly straight, radicle very short.—*White Maple. Silver-leaved Maple. Soft Maple.*

10. *A. rubrum* (Linn.): leaves cordate (rarely truncate or rounded at the base), whitish and at length mostly glabrous beneath, 3–5-lobed, with the sinuses acute; lobes acute or acuminate, doubly serrate or incisely toothed, the terminal one longest; pedicels at length elongated; petals oblong or linear; fruit (and ovaries) glabrous, with small, at first arcuately converging, at length slightly divergent wings.—*Michx.! fl.* 2. *p.* 253; *Willd. l. c.; Michx. f. sylv.* 1. *t.* 41; *Ell. sk.* 1. *p.* 449; *Catesb. Car.* 1. *t.* 62; *Hook. l. c.; Darlingt. l. c.* A. glaucum, *Marsh. arbust.*? A. Carolinianum, *Walt. Car. p.* 251? A. coccineum, *Michx. f. sylv.* 1. *p.* 209. A. sanguineum, *Spach, l. c. p.* 176.

β.? leaves smaller, 3-lobed, mostly truncate or rounded at the base, more or less tomentose beneath; flowers greenish-yellow.—A. rubrum, var. *Marsh.; Darlingt. l. c.*

In swamps and on the marshy borders of streams, Canada! to Florida, west to the sources of the Oregon (*Douglas*). *β.* New Jersey! and Pennsylvania! to New Orleans! March–April.—Tree sometimes 60–80 feet high, occasionally 3–4 feet in diameter; the wood close-grained; the fibres often curled; sap affording a little sugar: young branches red, clouded with white. Leaves longer than broad, moderately 3-lobed, the lateral lobes usually with 2 small ones at the base. Flowers small, bright purple or reddish, on very short pedicels, which at length become filiform and pendulous. Stamens 5–6: anthers red. Disk lobed, glandular. Wings of the fruit about an inch in length, at first reddish.—*Red Maple. Swamp Maple.*—The var. *β.* of which we have only met with imperfect specimens, may possibly prove to be a distinct species. Judging from specimens in the herbarium of the late Prof. Barton, it is apparently the A. barbatum of Pursh. The leaves often scarcely exceed an inch and a half in length. [illegible]

‡ *Doubtful species.*

11. *A. barbatum* (Michx.): leaves with 3 short lobes, serrate; peduncles of the staminate flowers branching, of the pistillate simple; calyx of the staminate flowers densely bearded within; wings of the fruit erect. *Michx. fl.* 2. *p.* 252.

Carolina, *Michaux.* Flowers pale green, sometimes all staminate, sometimes with perfect flowers intermixed. *Michx.*—This species, of which it is remarkable that the younger Michaux makes no mention whatever, either in his general observations or catalogue of North American Maples, has been identified by no succeeding botanist except Pursh, who adds "In deep pine and cedar swamps, New-Jersey to Carolina; April–May. A small tree: leaves small." But Pursh's plant seems to be our *β.* of A. rubrum; at least specimens of A. rubrum, without fruit or flowers, exist in herb. Barton labelled, apparently by Pursh, *A. barbatum.* The flowers and inflorescence of this plant, however, do not at all agree with Michaux's character. We suspect, indeed, that the description of A. barbatum, *Michx.* was drawn up, at least as to the flowers and fruit, from specimens of A. saccharinum; the only species, so far as we are aware, which has the sepals bearded inside.

2. NEGUNDO. *Mœnch; Nutt. gen.* 1. *p.* 253; *DC. l. c.*

Negundium, *Raf.*

Flowers diœcious. Petals none. Pedicels of the staminate flowers capillary, fascicled, from lateral aggregated buds: fertile flowers in racemes.—

Leaves compound, pinnately 3–5-foliolate: leaflets petiolulate.—Otherwise same as Acer.

1. *N. aceroides* (Mœnch): leaflets 3–5, ovate or oval, acuminate, sparingly and unequally toothed above the middle, the upper ones sometimes confluent; fertile racemes elongated, pendulous; fruit oblong, with large upwardly dilated arcuate wings.—*Mœnch, meth. p.* 334. N. fraxinifolium, *Nutt.! gen.* 1. *p.* 253; *DC. prodr.* 1. *p.* 596; *Hook. fl. Bor.-Am.* 1. *p.* 114. Acer Negundo, *Linn.; Michx.! fl.* 2. *p.* 253; *& Michx. f. sylv.* 1. *t.* 46.

In low grounds, Canada (lat. 54° ex *Hook.*) to N. Carolina! & Arkansas! April.—Trunk 15–30 feet high, with a smooth yellowish-green bark. The sap contains sugar in small quantity. Leaves slightly pubescent, varying from ovate to nearly lanceolate. Flowers yellowish-green. Stamens mostly 5. Wings of the fruit broad and incurved at the apex.—*Ash-leaved Maple. Box-Elder.*

2. *N. Californicum:* young leaves villous, 3-foliolate; leaflets 3-lobed; lobes incised or toothed.—N. Mexicanum, *DC. l. c.?*

California, *Douglas!*—Our specimens have neither fruit nor full-grown leaves; but they appear to belong to a very distinct species. The leaflets are all lobed and incised; the terminal one largest and broadly cuneiform at the base. Flowers very much crowded: sepals unequal.—The N. Mexicanum is so briefly characterised that it is impossible to determine the question of its identity with our species.

ORDER XLIV. HIPPOCASTANACEÆ. *DC.*

Sepals 5, usually united into a campanulate or tubular 5-toothed calyx: æstivation imbricated. Petals 5, or 4 by the suppression of the inferior one, commonly unequal and irregular, unguiculate, hypogynous. Stamens 6–8, commonly 7, distinct, unequal, inserted upon the hypogynous disk: anthers oval, versatile. Ovary roundish, composed of 3 united carpels, 3-celled, with 2 collateral ovules in each cell: style filiform, acute. Fruit subglobose, coriaceous, 3- (or frequently by suppression 1–2-) celled, 2–3-valved, with loculicidal dehiscence. Seeds solitary or very few, large, with a smooth or shining testa, and a broad pale hilum, somewhat campulitropous, with no albumen. Cotyledons very thick and fleshy, gibbous, cohering, remaining under ground in germination: radicle conical, curved: plumule large, 2-leaved.—Trees or shrubs. Leaves opposite (in Ungnodia alternate), exstipulate, compound: leaflets serrate. Flowers showy: pedicels articulated.

1. ÆSCULUS. *Linn.; Juss. gen. p.* 251.

Hippocastanum, *Tourn.; Gærtn.*—Æsculus & Pavia, *Boerh.; DC.*—Æsculus, Pavia, Macrothyrsus, *&* Calothyrsus, *Spach.*

Sepals united into a 5-toothed campanulate or tubular calyx. Petals 4–5, more or less unequal. Otherwise as in the character of the Order.—Leaves palmately 5–7-foliolate: leaflets simply pinnately veined. Flowers in terminal thyrsoid racemes or panicles.—*Horse-Chestnut. Buckeye.*

§ 1. *Fruit echinate.*—ÆSCULUS, DC.

1. *Æ. glabra* (Willd.): stamens nearly twice the length of the (yellowish-white) corolla; petals 4, spreading, a little unequal; the claws scarcely the length of the campanulate calyx; thyrsus racemose, loosely-flowered; leaflets 5, oval or oblong, acuminate, finely and unequally serrate, glabrous.—*Willd. enum. p.* 405; *Pursh, fl.* 1. *p.* 255; *DC. prodr.* 1. *p.* 597. Æ. pallida, *Willd. l. c. &c.* Æ. echinata, *Muhl. cat. p.* 38. Æ. Ohioensis, *DC. l c.; Riddell, synopsis, p.* 34. Pavia Ohioensis, *Michx. f. sylv.* 2. *p.* 101, *t* 29. P. pallida & glabra, *Spach, in ann. sci. nat.* (*ser.* 2.) 2. *p.* 54.

Banks of rivers, &c. Western parts of Pennsylvania! and Virginia: Ohio! Kentucky! May–June.—A small tree with a rough bark, which exhales an unpleasant odor. Leaflets somewhat acute at the base, at first sessile, at length more or less petiolulate, slightly pubescent along the veins when young, usually a little bearded in the axils of the veins beneath. Branches of the thyrsus short, 4–6-flowered; the flowers mostly unilateral, small (not half the size of those of the common Horse-Chestnut). Petals nearly equal in length, the limb of the lateral ones roundish; of the superior ones oblong-spatulate, about twice as long as the claw. Stamens 7: filaments curved. Fruit prickly, resembling that of the cultivated Horse-Chestnut (Æ. Hippocastanum), but scarcely half the size.—*Ohio Buckeye. Fetid Buckeye.*

§ 2. *Fruit unarmed.*—PAVIA, DC.

2. *Æ. parviflora* (Walt.): stamens capillary, thrice the length of the (white) corolla; petals 4, somewhat spreading, nearly similar, spatulate; the claws longer than the obconical calyx; thyrsus racemose, very long, the branches about 3-flowered; leaflets 5–7, oval-obovate, acuminate, serrulate, velvety-canescent beneath.—*Walt. Car. p.* 128. Æ. macrostachya, *Michx. fl.* 1. *p.* 220; *Jacq. eclog. Am.* 1. *t.* 9; *Ell. sk.* 1. *p.* 436; *Bot. mag. t.* 2118. Æ. macrostachys, *Pers. syn.* 1. *p.* 403. Pavia macrostachya, *DC. prodr.* 1. *p.* 598. P. alba, *Poir. dict.* 5. *p.* 95. P. edulis, *Poit. arb. fr. t.* 88. Macrothyrsus discolor, *Spach, l. c. p.* 61.

Near rivulets in the western part of S. Carolina! and Georgia! April–May.—A small shrub, 2–4 feet high, sometimes with radical stolons. Leaflets petiolulate. Flowers very numerous, in a long somewhat virgate thyrsus. Petals small, with long claws, spatulate; the upper ones longest and a little narrower. Stamens 6–7: filaments capillary, glabrous, slightly curved. —The fruit is said to be edible.

3. *Æ. Californica* (Nutt.! mss.): "stamens longer than the (rose-color) corolla; petals 4 [4–5, *Spach*], somewhat similar, slightly spreading; the claws shorter than the campanulate-tubular somewhat unequally-toothed calyx; thyrsus short and dense; leaflets 5, ovate-lanceolate or elliptical-oblong, acuminate, subcordate or rounded at the base, serrulate, glabrous, paler and somewhat glaucous beneath."—Calothyrsus Californica, *Spach, in ann. sci. nat.* (*ser.* 2.) *p.* 62.

California, *Botta* (ex *Spach*): near streams in the vicinity of Monterey, *Nuttall!* March.—A low spreading tree, glabrous except the petioles of the leaflets and calyx, which are minutely canescent. Calyx with 5 small somewhat unequal teeth, at length splitting down on the lower side. Stamens 5–6: filaments arcuate, glabrous. Ovary globose-ovate, pubescent, not echinate.—The flowers are apparently a little smaller than those of the preceding species.

Bot mag. t. 5077.

4. *Æ. Pavia* (Linn.): stamens somewhat shorter, or a part of them a little longer, than the (red) corolla; petals 4, connivent, very unequal; the claws of the lateral ones about the length of the tubular calyx; thyrsus loose, the branches few-flowered; leaflets 5, oblong-lanceolate, cuneate-oblong, or oval, slightly acuminate, unequally serrulate, minutely pubescent, or nearly glabrous except along the veins beneath.—*Ait. Kew.* 1. *p.* 494; *Walt. Car. p.* 128; *Michx.! fl.* 1. *p.* 219; *Pursh, fl.* 1. *p.* 254; *Ell. sk.* 1. *p.* 434; *Audubon, birds of Amer. t.* 78. Pavia, *Boerh. Lugd.-Bat.* 2. *t.* 260; *Duham. arb.* 2. *t.* 19. P. rubra, *Lam. ill. t.* 273; *DC. l. c.* P. Michauxii, &c., *Spach, l. c.*

β. discolor: branches of the thyrsus several- (4-10-) flowered, with the flowers somewhat unilateral; leaflets minutely tomentose beneath.—Æ. discolor, *Pursh, l. c.? ; Bot. reg. t.* 310? Æ. hybrida, *DC. hort. Monsp.* 1813. *p.* 75? Pavia hybrida, *DC. prodr. l. c.?* P. discolor, *Spach, l. c.?*

In fertile valleys; mountains of Virginia! to Georgia! Louisiana! and Arkansas! April–May.—A shrub 3–10 feet high; near the mountains sometimes a small tree. Leaflets often somewhat doubly serrate, all except the lateral ones usually attenuate at the base, at length petiolulate, smooth and a little shining above. Branches of the thyrsus about 3-flowered: pedicels slender. Flowers large. Calyx purplish, nearly glabrous, tubular-funnel-shaped. Upper petals longest; the claw about thrice the length of the small spatulate limb: limb of the lateral petals roundish, about the length of the claw, somewhat convolute. Stamens 6–8: filaments filiform, nearly straight, hairy below, as also the claws of the petals, sometimes all a little shorter than the lateral petals; but a portion usually a little exceeding the upper petals.—Our *β.* discolor, of which we have specimens both from Georgia and Louisiana, is not improbably the Æ. discolor of Pursh. The inflorescence resembles that of Æ. flava; but the flowers (apparently pale dull red, or purple) are wholly those of Æ. Pavia.—According to Elliott, the bruised branches or powdered seeds of this species are sometimes employed to stupify fish: when the water of small ponds is impregnated, the fish rise to the surface almost lifeless, and may be taken with the hand. The root, according to the same authority, is used as a substitute for soap in washing woollen clothes.—*Small Buckeye.*

5. *Æ. flava* (Ait.): stamens shorter than the (light yellow) corolla; petals 4, connivent, very unequal; the claws of the lateral ones exceeding the campanulate calyx; branches of the thyrsus 4–7-flowered; the flowers mostly unilateral; leaflets 5–7, elliptical or obovate-oblong, acuminate, serrulate, more or less canescently pubescent beneath.—*Ait. Kew.* 1. *p.* 494; *Willd. Berl. baum. p.* 13, *& sp.* 2. *p.* 286; *Pursh, fl.* 1. *p.* 255; *Ell. sk.* 1. *p.* 436. Æ. lutea, *Wang. in act. nat. scrut. Berol.* 8. *t.* 6; *Michx.! fl.* 1. *p.* 219; *Pers. syn.* 1. *p.* 403. Æ. neglecta, *Lindl. bot. reg. t.* 1009? Pavia flava, *DC. l. c.* P. lutea, *Poir.; Michx. f. sylv.* 2. *p.* 98, *t.* 91; *Duham. arb.* 3. *t.* 38.

Near large rivers (in rich soil), Western States! and along the Alleghany Mountains from Virginia and N. Carolina! to Georgia. April–May.—Tree 30–80 feet high (in the Southern States sometimes only 4–6 feet high, according to *Elliott*); the trunk often 3 or 4 feet in diameter. Petioles with a pubescent line along the upper side. Leaflets glabrous above, except the midrib and veins, which are often clothed with a reddish-brown pubescence, at first nearly sessile, at length petiolulate; the lateral ones sometimes rather obtuse, but the others attenuate, at the base. Peduncles, pedicels, and calyx pubescent. Pedicels very short. Flowers as large as in Æ. Pavia. Petals puberulent; the claws villous within: upper ones a little exceeding the others; the spatulate limb minute: lateral ones large, roundish, subcordate at the base. Stamens usually 7: filaments straight or somewhat arcuate, subulate, villous. Ovary pubescent. Fruit 2 inches or more in diameter, about

2-seeded. Seeds larger than in the common Horse-Chestnut.—*Sweet Buckeye. Big Buckeye.* Mr. Riddell (*Synopsis of Western plants, p.* 34.) notices "a species of Æsculus, growing near Cincinnati, Ohio, which resembles Æ. flava, but differs in the deep orange and yellow hue of its flowers, in its glabrous irregularly serrate leaves, and more acute divisions of the calyx."

‡ *Uncertain species, probably forms which have originated in gardens.*

6. *Æ. carnea* (Willd.): capsules echinate; stamens 7, longer than the 4-petalous (deep pink) corolla; anthers glabrous; leaflets ovate-lanceolate, acuminate, glabrous, woolly in the axils of the veins beneath. *Don.*—" *Willd. ex Guimp. & Hayne, freund. holz. t.* 22; *Lindl. bot reg. t.* 1056. Æ. rubicunda, *Loisel. herb. amat. t.* 367; *DC. prodr.* 1. *p.* 597." Pavia carnea, *Spach, l. c.; Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 301.
North America?—A small tree.

7. *Æ.* (sub *Pavia*) *Watsoniana* (Spach): capsules echinate; flowers octandrous (dark red); claws of the lateral petals a little shorter than the calyx; stamens somewhat shorter than the lateral petals; the anthers pubescent along the margin; leaflets 5–8, sessile, lanceolate, acuminate, glabrous. *Spach, l. c. p.* 53.
This species, according to Spach, is the Æ. carnea, *Watson, dendr. Brit. t.* 121. (Æ. rubicunda, *Lodd. bot. cab. t.* 1242.): the description seems to have been drawn merely from Watson's figure.

8. *Æ. humilis* (Lodd.): capsules unarmed; stem decumbent; leaflets 5, lanceolate, petiolulate, unequally serrate, pubescent beneath; calyx cylindrical-funnel-shaped and pubescent, as well as the corolla; stamens included, a little longer than the calyx; flowers blood-colored, in loose racemes. *G. Don*, sub Pavia.—" *Lodd.; Lindl. bot. reg. t.* 1018."
North America.—A shrub 2–3 feet high.

Pavia lucida, P. intermedia, P. Willdenoviana, P. Lindleyana, and *P. atropurpurea*, of Spach may be safely referred to Æsculus Pavia. *P. mutabilis, P. livida*, and perhaps *P. versicolor*, of the same author, appear to be forms of what we consider the same species.

2. UNGNODIA. *Endl. atakta botanica, p... t..*

We have not yet received the above-cited work of Endlicher, in the fifth fasciculus of which (according to Sir Wm. Hooker) this very remarkable genus is figured and described. The plant was collected by the late Mr. Drummond in Texas, and specimens were distributed with his first Texan collection. It forms a large tree: the leaves are alternate, and pinnately 5-foliolate: the flowers are small, in few-flowered racemes, which appear to be axillary or clustered along the branches: the sepals are nearly distinct: petals 5 (rarely 6), similar, spreading, with an obovate slightly crenulate lamina, raised on a short and very thick woolly claw, which bears at its summit a curious fimbriate crest: stamens 8–10, declined and much exserted, a portion of them apparently somewhat coherent with a small unilateral appendage or projection of the torus, or with the base of the (effete?) ovary. Fruit not seen.

ORDER XLV. SAPINDACEÆ. *Juss.*

Flowers usually polygamous. Sepals 4–5, distinct or nearly so, imbricated in æstivation. Petals as many as the sepals and alternate with them, or fewer by the abortion of one (sometimes entirely wanting), inserted outside the hypogynous disk (or row of glands) which occupies the bottom of the calyx; the inside either naked or hairy, glandular or furnished with a petaloid scale. Stamens 8 or 10, rarely fewer or more numerous, inserted either on the disk, or between the glands and

the ovary: filaments distinct or very slightly united at the base: anthers introrse (the pistil of the staminate flowers either rudimentary or entirely wanting). Ovary composed of 3 (rarely 2–5) united carpels: styles partly or completely united: ovules solitary in each cell, erect or ascending; sometimes 2, the upper one ascending, the lower suspended; rarely 3 or more. Fruit 2–3-celled, capsular, vesicular, or samaroid, or frequently fleshy and indehiscent. Seeds 1–3 in each cell, usually arilled, without albumen. Embryo rarely straight; the cotyledons usually incumbent on the radicle, or spirally convolute, sometimes combined into a thick mass.—Trees, or tendril-bearing shrubs or herbs. Leaves alternate, usually compound and exstipulate, often marked with pellucid lines or dots. Flowers small.

TRIBE I. SAPINDEÆ. *Camb.*

Ovary with one ovule in each cell. Embryo curved, rarely straight.

1. CARDIOSPERMUM. *Linn.; Gærtn. fr. t.* 79.

Sepals 4; the two outer ones smallest. Petals 4; the two lateral ones usually adhering to the sepals, each with an emarginate scale above the base; the two lower ones remote from the stamens, their scales furnished with a glandular crest at the extremity, and ending in an inflexed appendage beneath the apex. Glands of the disk 2, round or linear, opposite the lower petals. Stamens 8, the four nearest the glands shorter than the others. Style trifid, stigmatose on the inside. Fruit a membranous bladdery capsule, composed of 3 carpels united at the axis. Seeds globose, on a thick funiculus, which is usually expanded at the base into a 2-lobed aril; the hilum broad and cordate.—Climbing herbs. Leaves 2-ternate. Peduncles axillary, racemose at the apex; the lowest pair of pedicels changed into tendrils.

1. *C. Halicacabum* (Linn.): annual, nearly glabrous; leaflets ovate-lanceolate, incisely lobed and toothed; fruit large, roundish-pyriform.—*Lam. ill. t.* 317; *Nutt. gen.* 1. *p.* 257; *Torr.! in ann. lyc. New-York*, 2. *p.* 172.
On the Missouri and its branches, *Dr. James!* Texas, *Drummond!* Native. Cultivated occasionally, but hardly naturalized, in the Atlantic States.

2. SAPINDUS. *Linn.; Lam. ill. t.* 307.

Sepals 4–5; two of them exterior. Petals as many as the sepals, or one of them abortive, glandular or bearded within, or with a scale above the claw. Disk fleshy, entire or crenulate-lobed. Stamens 8–10, inserted between the margin of the disk and the ovary. Styles connivent or combined: stigmas 3. Fruit composed of 2–3 globose fleshy connate carpels, one or two of which are usually abortive. Seed large, spherical, solitary in each carpel; testa (endocarp, *Kunth*, *Camb.*) crustaceous: aril none.—Trees. Leaves exstipulate, abruptly pinnate, or unequally pinnate by the abortion of one of the ultimate pair of leaflets. Flowers racemose or panicled. Berries saponaceous.

1. *S. marginatus* (Willd.): unarmed; petioles wingless, or slightly margined towards the summit; leaflets 9–18, very inequilateral and somewhat falcate, ovate-lanceolate, with a slender acumination; flowers in dense very compound terminal and axillary panicles.—*Willd. enum. p.* 432; *Muhl.! cat. p.* 41; *DC. prodr.* 1. *p.* 607. S. Saponaria, *Lam. ill. t.* 307; *Michx.! fl.* 1. *p.* 242; *Pursh, fl.* 1. *p.* 274; *Nutt.! gen.* 1. *p.* 257; *Ell. sk.* 1. *p.* 460. S. inæqualis, *DC. l. c.?*

Coast of Georgia and Florida (*Baldwin! Nuttall!*) to Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!*—Tree 10–40 feet high, with smooth branches. Leaves glabrous or slightly pubescent beneath: leaflets mostly alternate, somewhat petiolulate, rather shining and strongly veined above. Panicles large. Flowers diœcious or polygamous. Fruit globose, as large as a small bullet, of one carpel, with the rudiments of two abortive ones at the base.—*Soap-berry.*

TRIBE II. DODONEACEÆ. *Camb.*

Ovary containing 2–3 (rarely more) ovules in each cell. Embryo spirally convolute.

3. DODONÆA. *Linn.; DC. prodr.* 1. *p.* 616.

Sepals 4, deciduous. Petals none. Stamens 8: filaments very short: anthers oblong or linear. Style filiform, distinct from the wings of the capsule, slightly 3-cleft at the apex. Capsule 2–3-valved, 2–3-winged. Seeds 2 in each cell, subglobose. *DC.*—Shrubs, with simple oblong entire leaves.

1. *D. viscosa* (Linn.): leaves viscous, obovate-oblong, cuneiform at the base; flowers racemose; fruit 2–3-winged, longer than the pedicels. *DC.*—*Plum. ed. Burm. t.* 247; *Sloane, hist.* 2. *t.* 162; *DC. l. c.*

Near St. Augustine, Florida, *Mr. Read* (in herb. acad. Philad.!) *Dr. Hassler!*—We have only seen imperfect specimens of this plant.

ORDER XLVI. CELASTRACEÆ. *R. Br.*

Sepals 4–5, united at the base, imbricated in æstivation, usually persistent. Petals as many as the sepals and alternate with them, plane, inserted by a broad base under the margin of the disk: æstivation imbricated. Stamens as many as the petals and alternate with them, inserted on the margin or upper surface of the large flat and fleshy disk which covers the bottom of the calyx: anthers introrse. Ovary more or less immersed in and adhering to the disk, 2–5 (rarely by abortion 1-) celled, with 1, 2, or several erect or ascending ovules in each cell: styles and stigmas 2–5, distinct or combined into one. Fruit free from the calyx, 2–5- (or by abortion 1-) celled, either drupaceous, baccate, samaroid, membranaceous, or capsular with loculici-

dal dehiscence. Seeds anatropous, 1 or few in each cell, ascending or erect, or by resupination suspended, often arilled: albumen fleshy, often very thin or wanting. Embryo straight, usually nearly as long as the albumen: radicle short: cotyledons thick or foliaceous.—Shrubs, or rarely trees, with alternate or opposite leaves. Flowers sometimes polygamous or diœcious.

Cyrilla, *Linn.* and Cliftonia, *Soland. in herb. Banks* and *Gærtn.* (Mylocarium, *Willd.*) are referred to this family by Lindley, we know not on what ground; since they have not a flat perigynous disk; their stamens are twice the number of the petals, the latter are inserted by a narrow base; their ovaries have a single suspended ovule in each cell, and the embryo is cylindrical and slender. These two genera, with Elliottia, *Muhl.*, form apparently a suborder of Ericaceæ, perhaps even a group of equal rank with Pyrolaceæ, &c., (which may receive the name CYRILLEÆ, from the oldest genus), distinguished from Ericaceæ proper by the ovary seated upon a short torus, with a single suspended ovule in each cell, by the texture of the pericarp, the flat or dilated filaments, with the cells of the anthers not separated or appendaged either at the apex or base, and opening longitudinally; and by the polypetalous corolla (the petals of Elliottia, although cohering at the base, are at length separable), which is hardly met with in true Ericaceæ, except in Clethra, to which Elliottia is somewhat related. Pickeringia, *Nutt.* (Cyrilla paniculata, *Nutt. in Sill. jour.* 5. *p.* 290) is, as the acute botanist and zoologist to whom it was dedicated first suspected, a species of Ardisia; probably A. coriacea, *Swartz*, a West Indian plant.

TRIBE I. STAPHYLEAÆ. *DC.*

Seeds not arilled, with a large truncate hilum; the testa bony. Cotyledons thick. Disk urceolate, 5-angled. Leaves opposite, unequally pinnate, with (caducous) general, and sometimes partial stipules: leaflets serrate. Flowers in terminal racemes or panicles.

1. STAPHYLEA. *Linn.; Lam. ill. t.* 210.

Flowers perfect. Sepals 5, oblong, erect, colored, persistent. Petals 5. Stamens 5. Ovary of 3 carpels united at the axis: styles separate or separable. Fruit a membranaceous and inflated 2–3-celled 2–3-lobed capsule. Seeds globose, ascending, few, or by abortion solitary, in each cell; albumen little or none.—Shrubs. Leaves 3–7-foliolate: leaflets involute in vernation. Flowers white: the racemes sometimes panicled.

1. *S. trifolia* (Linn.): leaves 3-foliolate, with caducous stipules; leaflets ovate, acuminate, finely serrate, more or less pubescent when young; styles glabrous, connate above; capsules inflated.—*Michx.! fl.* 1. *p.* 184; *Ell. sk.* 1. *p.* 369; *DC. prodr.* 2. *p.* 2; *Torr.! fl.* 1. *p.* 325; *Bigel. fl. Bost. ed.* 2. *p.* 121; *Hook. fl. Bor.-Am.* 1. *p.* 119. Staphylodendron, *Tourn. inst. t.* 386.

In moist places, Canada! to S. Carolina, and west to Arkansas! May.—Shrub 6–12 feet high, with slender smooth dotted branches. Petioles pubescent above. Partial stipules mostly none. Petals obovate-spatulate, ciliate at the base. Stamens rather exserted: filaments hairy below: anthers cordate; the lobes somewhat united at the tip. Capsule 2 inches long, the carpels (sometimes 4) distinct at the summit, tipped with the persistent styles, and opening by the inner suture. Seeds smooth and polished, all but one often abortive.—*Bladder-nut.*

TRIBE II. EUONYMEÆ. *DC.*

Celastraceæ proper, *Brongn.; Lindl.*

Seeds usually arilled. Cotyledons sometimes foliaceous.—Leaves simple, entire or serrate, with minute deciduous stipules. Flowers in terminal racemes or axillary cymes.

2. CELASTRUS. *Linn.* (partly); *Kunth, syn.* 4. *p.* 185.

Flowers by abortion somewhat diœcious or polygamous. Sepals 5, united below into a very short turbinate calyx-tube. Petals 5, ovate or oblong, sessile. Stamens rising from the margin of the orbicular fleshy disk. Ovary 3-celled, sessile on the disk: styles short, united, with a papillose 3-lobed stigma. Capsule subglobose, 2–3-celled, the dissepiments sometimes incomplete or evanescent, loculicidal. Seeds erect, 1–2 in each cell, enclosed in a pulpy aril. Embryo included in the thin albumen, nearly the length of the seed: cotyledons broad and foliaceous.—Climbing unarmed shrubs. Leaves alternate, of a rather thin texture. Stipules minute. Racemes terminal, somewhat compound: pedicels articulated. Flowers small, pale yellowish-green.

C. myrtifolius, *Linn.* is doubtless a species of Ilex: C. bullatus, *Willd.*, founded on a figure of Plukenet, is a wholly doubtful plant, probably not American.

1. *C. scandens* (Linn.): leaves oval or somewhat obovate, abruptly acuminate, with glandular or mucronulate incurved serratures, glabrous; racemes nearly simple; petals obovate-oblong.—*Willd. sp.* 1. *p.* 1125 (excl. syn.); *Michx.! fl.* 1. *p.* 154; *Gærtn. fr. t.* 95; *DC. prodr.* 2. *p.* 6.
Borders of woods & streams, Canada! to Virginia, and west to Missouri! June.—Capsule orange-color when mature; the styles separating by the dehiscence of the valves. Seeds reddish-brown, coated with a bright orange, at length scarlet, aril. *Bitter-sweet. Waxwork.*

[illegible] ovata [illegible] p.34, [illegible]

3. EUONYMUS. *Tourn. inst. t.* 388; *Linn.; Lam. ill. t.* 131.

Sepals 4–5 (rarely 6), united at the base, forming a short flat calyx. Petals 4–5 (rarely 6). Stamens inserted on the upper surface of the broad and flat disk: filaments short, the base persistent: anthers with a thick connectivum at the back, opening transversely or longitudinally. Ovary immersed in the disk, with as many 2–3-ovuled cells as petals: styles united, short and thick: stigmas united into one, obtuse or lobed. Capsule 4–5-lobed, 4–5-celled, loculicidal. Seeds usually enclosed in a fleshy red or purple aril. Embryo with broad foliaceous cotyledons: albumen fleshy and oily.—Shrubs, sometimes trailing or climbing by rootlets. Leaves opposite, serrate. Stipules mostly none. Peduncles axillary, 1-many-flowered: inflorescence cymose.

1. *E. atropurpureus* (Jacq.): branches smooth; leaves (rather large) oval or elliptical-oblong, acuminate, mostly acute at the base, finely serrate, on distinct petioles, puberulent beneath; peduncles compressed, several-flowered; parts of the flower usually in fours; petals roundish-obovate; capsules

smooth, deeply lobed.—*Jacq. hort. Vind.* 2. *t.* 120; *Willd. sp.* 1. *p.* 1132; *Michx.! fl.* 1. *p.* 155; *DC. prodr.* 2. *p.* 4; *Ell. sk.* 1. *p.* 293; *Torr.! fl.* 1. *p.* 261. E. Caroliniensis & latifolius, *Marsh. arbust. p.* 43.

β.? leaves glabrous, often obtuse at the base; peduncles 2-3-flowered, ("flowers pentandrous," *Nutt.*)—E. occidentalis, *Nutt.! mss.* E. atropurpureus? *Hook. fl. Bor.-Am.* 1. *p.* 119.

In shady woods, Upper Canada! to Florida! west to Kentucky! and Missouri! β. Oregon, in dark woods, *Douglas*, *Nuttall!* June–July.—Shrub 4–12 feet high; the branches slightly 4-sided. Leaves 2–5 inches long. Petals dark purple. Capsule crimson when mature. Seeds nearly white, invested with a bright red succulent aril.—*Burning-bush. Spindle-tree.*

2. *E. Americanus* (Linn.): branches smooth, 4-sided; leaves varying from elliptical-lanceolate to oval-obovate, on very short petioles; rather obscurely serrate, glabrous; peduncles 1–3-flowered; parts of the flower mostly in threes or fives; petals roundish-obovate; capsules depressed-globose, verrucose-echinate.— *Willd. sp. l. c.; Walt. Car. p.* 102; *Michx.! l. c.; Duham. arb.* 3. *t.* 9; *Ell. sk.* 1. *p.* 292; *DC. l. c.; Hook. l. c.; Darlingt. fl. Cest. ed.* 2. *p.* 150. E. sempervirens, *Marsh. arbust. p.* 43.

α. erect; leaves oval or elliptical-lanceolate, the uppermost often slightly falcate, mostly acuminate, acute or obtuse (rarely subcordate) at the base.

β. leaves narrowly elliptical or oblong, slightly falcate, the margin minutely serrate.

γ. trailing and often rooting; leaves ovate-lanceolate.—E. Americanus β. sarmentosus, *Nutt. gen.* 1. *p.* 154.

δ. trailing and rooting; leaves obovate or oval-obovate, obtuse or slightly acuminate, acute at the base.—E. obovatus, *Nutt.! l. c.; DC. l. c.*

In moist woodlands, Canada! to Florida! and west to Missouri. May–June.—Branches slender, green. Leaves 1–2 inches long, coriaceous, nearly evergreen in the Southern States. Parts of the flower mostly in threes or fives. Segments of the calyx very short and roundish. Petals greenish-yellow, tinged with purple. Capsule deep crimson when mature, slightly angled, densely muricate or warty; the dissepiments and aril scarlet. Seeds smaller than in the preceding, 1–3 in each cell.—Both species are very ornamental in autumn when the fruit is ripe.—*Straw-berry-tree. Burning-bush.*

3. *E. angustifolius* (Pursh): branches 4-sided; leaves linear-elliptical and elongated, subsessile, rather falcate, almost entire; peduncles mostly 1-flowered; sepals always five; fruit verrucose-muricate. *Pursh, fl.* 1. *p.* 168.

In shady woods, Georgia, *Lyon* ex *Pursh.*—Specimens of this plant which we have seen in the herbaria of Muhlenberg and Collins certainly appear different from E. Americanus; but the characters of the leaves will probably not be found constant, and there seems to be no other difference.

4. OREOPHILA. *Nutt. mss.*

Sepals 4, united below into a short turbinate calyx-tube, persistent. Petals 4, inserted under the edge of the disk, roundish, somewhat concave, spreading. Stamens 4, alternate with the petals, inserted into the margin of the broad and flat nearly entire disk, which covers the ovary and adheres to the throat of the calyx-tube: filaments rather short: anthers roundish. Ovary immersed in, but free from the calyx-tube, the summit coherent with the disk, 2-celled, with 2 erect collateral ovules in each cell: style very short: stigma capitate, obscurely 2-lobed. "Fruit an oval, coriaceous, compressed, 2-celled, 2-seeded (or by abortion 1-seeded) capsule. Seed erect, rather large, with a lacerated membranous aril at its base." *Nutt.*—A low excessively branched evergreen shrub, with small crowded, mostly opposite, entire or remotely serrulate leaves, and minute axillary subsolitary flowers.

O. myrtifolia (Nutt.! mss.)—Ilex myrsinites, *Pursh ! fl.* 1. *p.* 119. Myginda myrtifolia, *Nutt. ! gen.* 1. *p.* 109; *DC. prodr.* 2. *p.* 14; *Hook. fl. Bor.-Am.* 1. *p.* 120, *t.* 41. (opt.)
Subalpine hills, N. W. Coast, *Menzies ;* and throughout the Rocky Mountains, *Lewis ! Douglas, Nuttall !*—"The whole plant scarcely 2 feet high, densely branched, covering the steep sides of bushy hills, very leafy. Leaves varying from roundish-oval to linear-oblong, half an inch to above an inch in length, coriaceous, glabrous, shining above, sometimes with numerous, sometimes with small and sparse or obsolete serratures; the taste slightly bitter and astringent, very similar to that of black tea, or to that of Ilex vomitoria, for which it was mistaken by its discoverer, the indefatigable Menzies. Peduncle very short, 1–3-flowered: pedicels 2-bracteolate, slender. Flowers monœcious. The whole aspect of the plant is that of Phillyrea media; while its true affinity is with Celastrus, from which it differs much in habit: a lacerated membrane takes the place of the fleshy aril. *Nutt.*"—Pursh described this plant very badly. Hooker has given an excellent description and figure, which leaves nothing to be desired except as to the fruit and seeds (which have now for the first time been obtained by Nuttall); he suspects it should be removed from Myginda. Arnott observes (in *prodr. Ind. Or.* 1. *p.* 155.) that "M. ilicifolia, myrsinoides, and myrtifolia, having a bilocular ovary with two erect ovules in each cell, form a distinct genus, as has already been remarked by Kunth"; but most probably our plant is not a congener of the West Indian M. ilicifolia. The flowers are said by Nuttall to be monœcious; but this is at least not uniformly the case in our specimens: and perfect flowers are also represented in the detailed figure of this plant given by Sir Wm. Hooker.

ORDER XLVII. RHAMNACEÆ. *Juss.*

Calyx 4–5-cleft, with a valvate æstivation. Petals distinct, cucullate or convolute, narrowed at the base, inserted upon the throat of the calyx, sometimes wanting. Stamens equal in number to the petals and opposite them: anthers introrse or versatile, rarely 1-celled. Ovary of 2–4 united carpels, 2–4-celled, free from, or usually cohering with, the tube of the calyx, or more or less immersed in the fleshy perigynous disk: ovules solitary in each cell, erect: styles more or less connate: stigmas simple, usually distinct. Fruit free or commonly more or less cohering with the calyx, fleshy and indehiscent, or with the carpels dry and at length separable. Seeds erect, anatropous, not arilled: albumen fleshy, or rarely none. Embryo about as large as the seed: radicle short: cotyledons large, flat.—Trees or shrubs, the branches often thorny. Leaves simple, alternate (or rarely opposite), usually with minute stipules. Flowers small, mostly whitish or greenish, sometimes by abortion diœcious, monœcious, or polygamous: inflorescence various.

1. BERCHEMIA. *Necker; DC. prodr.* 2. *p.* 22; *Brongn. in ann. sci. nat.* 10. *p.* 356.

Calyx 5-parted, with a hemispherical tube; segments erect. Petals 5, convolute. Stamens enclosed within the petals: anthers ovate, 2-celled. Ovary half immersed in the annular flattish disk, but free from it, 2-celled: style short, conical, stightly bifid at the summit. Fruit oblong, drupaceous, with a bony 2-celled nut.—Erect or climbing unarmed shrubs. Leaves alternate, many-veined; the veins oblique and nearly simple. Flowers in small racemose panicles, or in fascicles, terminal and from the axils of the upper leaves.

1. *B. volubilis* (DC.): climbing; branches glabrous; leaves ovate, slightly undulated, mucronate, glabrous; flowers diœcious, in small panicles.—*DC. prodr.* 2. *p.* 22. Rhamnus volubilis, *Linn.; Jacq. ic. rar. t.* 336; *Walt. Car. p.* 101; *Michx.! fl.* 1. *p.* 153. Zizyphus volubilis, *Willd. sp.* 1. *p.* 1102; *Pursh, fl.* 1. *p.* 188; *Ell. sk.* 1. *p.* 290. Ænoplia volubilis, *Schult. syst.* 5. *p.* 322.

Damp rich soils, Virginia! to Florida! and west to the Mississippi! May–June.—Stem climbing to the height of 12–15 feet, tough and flexible, with pendent branches. Leaves 1–2 inches long, obtuse or slightly cordate at the base. Flowers minute: racemes or panicles 6–10-flowered. Calyx deeply cleft; the segments reticulated. Petals oblong, folded round the stamens. Drupe about 3 lines long, dark purple; pulp rather thin: nut very hard, smooth, with a slight groove on each side.

2. RHAMNUS. *Linn.; DC. prodr.* 2. *p.* 23; *Brongn. l. c. p.* 360.

Calyx urceolate, 4–5-cleft. Petals 4–5, emarginate or 2-lobed, usually more or less convolute. Torus thin, lining the tube of the calyx. Ovary free from the calyx, not immersed in the torus, 2–4-celled: styles 2–4, distinct or more or less connected. Fruit drupaceous, containing 2–4 cartilaginous nuts.—Shrubs or small trees. Leaves alternate or rarely opposite, on short petioles. Flowers minute, usually in short axillary clusters.

* *Leaves coriaceous, sempervirent.*

1. *R. oleifolius* (Hook.): unarmed, erect; leaves coriaceous, evergreen, elliptical-oblong, entire, revolute on the margin, glabrous; flowers pentandrous, in small axillary crowded panicles; petals very minute, stigma obscurely 2-lobed; fruit 2-seeded.—*Hook. fl. Bor.-Am.* 1. *p.* 123, *t.* 44; *Hook. & Arn. in bot. Beechy, p.* 136.

North West Coast, and California, *Menzies.* Woody plains around St. Barbara, *Nuttall!*—A shrub 6–12 feet high, the younger branches pubescent. Leaves about 2 inches long, the veins oblique and rather remote, in the young state pubescent beneath: petioles 3–4 lines long. Panicles on short peduncles. Sepals ovate, rather erect. Petals cucullate, partly enclosing the very short stamens. Anthers ovate-globose. Fruit about as large as a pea, globose.

2. *R. laurifolius* (Nutt.! mss.): "unarmed, erect; leaves coriaceous, evergreen, elliptical-oblong, or oblong, somewhat serrate, the veins approximated; flowers axillary, 2–4 together, on pedicels shorter than the calyx, tetrandrous; petals very minute.

"Near St. Barbara and Monterey, California. A shrub 10–12 feet high. Considerably allied to the preceding, but very different in the inflorescence and foliage; the leaves are shorter and wider, with 11 or 12 pairs of veins. In the young state and while flowering, the leaves are nearly glabrous, quite small and oblong, or oblong-ovate, and the stipules thin and membranaceous as well as smooth. In older brownish branches (perhaps a distinct species) the stipules and young leaves are silky-pubescent. The flowering branches are white and nearly glabrous. If these two plants should prove to be distinct species, one of them may retain the present name; and the other may be called R. leucodermis."—*Nuttall.*

3. *R. croceus* (Nutt.! mss.): "low and branching, the branches spinescent at the extremity; leaves coriaceous, evergreen, roundish-obovate (small) nearly glabrous, glandularly denticulate; flowers in axillary clusters; diœcious, tetrandrous, apetalous; styles exserted, distinct above; fruit obovate, 1-2-seeded.

"Bushy hills and thickets around Monterey, California.—A much branched thorny shrub, with yellow wood; the whole plant imparting a yellow color to water. Leaves about half an inch long, lucid, when dry of a bright yellowish-brown beneath: petioles about a line long. Fascicles 2–6-flowered: pedicels as long as the petioles. Sepals ovate, with one middle and 2 marginal nerves. Stamens nearly as long as the sepals. Ovary ovate. Styles often distinct below the middle. Fruit greenish or yellowish, usually (by abortion) 1-seeded. Seed with a longitudinal furrow on one side."—*Nuttall.*

** *Leaves deciduous.*

† Flowers tetrandrous.

4. *R. catharticus* (Linn.): erect; branches thorny at the summit; leaves ovate, denticulate-serrate; flowers fascicled, polygamous-diœcious, mostly tetrandrous; fruit subglobose, 4-seeded.—*Eng. bot. t.* 1629; *Torr.! fl.* 1. *p.* 263; *DC. prodr.* 2. *p.* 24.

Mountains and in woods; in the most retired parts of the Highlands of New-York, *Dr. Barratt!* Near Williamstown, Massachusetts, *Dewey!* and about Boston and Salem, *Mr. Oakes!* Probably introduced.—A large shrub, with spreading branches and grayish bark. Leaves fascicled and somewhat opposite, about 1½ inch long, nearly glabrous; the larger veins nearly longitudinal. Pedicels 3–4 lines long. Flowers sometimes triandrous: sepals at length reflexed. Petals erect, entire. Stamens a little longer than the calyx. Fruit black, nauseous and cathartic.—*Buck-thorn.*

5. *R. lanceolatus* (Pursh): erect, unarmed; leaves oblong, or ovate-lanceolate, acuminate, acute at the base, serrulate, more or less pubescent beneath; flowers solitary or 2–3 together, axillary, tetrandrous; petals minute, 2-lobed, enclosing the stamens; styles united; stigmas 2, diverging; fruit 2-seeded, globose-obovate; seed plano-convex, with a deep furrow on the outside.—*Pursh, fl.* 1. *p.* 166; *DC. prodr.* 2. *p.* 27. R. Shortii, *Nutt.! in jour. acad. Philad.* 7. *p.* 91. Cardiolepis nigra, rubra, & spinosa, *Raf. neogen.* (1825) *no.* 2.

Cliffs of Kentucky River, *Short!* Missouri, *Baldwin!* Tennessee, *Pursh.* May.—A shrub, with smooth grayish bark. Leaves 2–2½ inches long, usually pubescent beneath, but when old sometimes nearly glabrous: petioles 2–3 lines long. Flowers perfect, on short pedicels at the base of the young shoots. Petals broad, folded round the short stamens, and partly enclosing them. Styles exserted, united the greater part of their length, distinct and somewhat recurved above. Fruit as large as a pepper-corn, red or black, usually 2-sided.—Our plant does not exactly agree with Pursh's description, as the leaves are seldom so narrow as to be called lanceolate; but there can be little doubt of its being the same species.

6. *R. parvifolius:* unarmed; leaves ovate, serrulate, pubescent (in the young state), acute or emarginate; flowers solitary or 2–3 together, axillary, on very short pedicels, tetrandrous (rarely pentandrous); petals minute, 2-lobed, partly surrounding the very short stamens; styles 2, united below, very short and conical.

Harper's Ferry, Virginia, *Pursh!* (v. s. in *herb. Barton*).—A shrub with smooth gray bark. Leaves (immature) half an inch long, pubescent, particularly on the lower surface, acute at the base. Tube of the calyx narrow, attenuated downward. Petals about as long as the stamens. Ovary (abortive) oblong, shorter than the tube of the calyx.—We have only seen immature specimens of this plant, in the herbarium of the late Dr. Barton. They were labelled in the hand-writing of Pursh "Rhamnus franguloides, *mihi.—Michx.?* Harper's Ferry." We cannot refer it to any other species described in this work. It may be the R. franguloides of Pursh's Flora, but it is certainly not the plant of Michaux.

†† Flowers pentandrous.

7. *R. alnifolius* (L'Her.): erect, unarmed; leaves oval, acuminate, serrate, pubescent on the veins beneath; flowers solitary or aggregated, pentandrous (rarely tetrandrous), apetalous; styles 3, very short, united nearly to the summit; disk somewhat fleshy; fruit roundish-turbinate.—*L'Her. sert. p.* 5; *Torr.! fl.* 1. *p.* 263; *DC. prodr.* 2. *p.* 25; *Hook. fl. Bor.-Am.* 1. *p.* 122, *t.* 42. R. franguloides, *Michx. fl.* 1. *p.* 153; *Pursh, fl.* 1. *p.* 166?

Sphagnous swamps, Hudson's Bay, New England! and northern part of New-York! to Pennsylvania (*Muhlenberg*). May–June.—A shrub 2–4 feet high. Leaves 1–3 inches long, acute at the base; the lateral veins oblique and rather prominent. Flowers produced on the lower part of the young shoots; pedicels 2–3 lines long. Tube of the calyx hemispherical; sepals spreading. Fruit black, rather fleshy, about the size of a currant, 3-seeded. Seeds plano-convex, without a furrow.

8. *R. Carolinianus* (Walt.): erect, unarmed; leaves oval-oblong, obscurely serrate, nearly glabrous (or rarely pubescent beneath); umbels axillary, on peduncles much shorter than the petioles; flowers perfect, pentandrous (sometimes tetrandrous), petals minute, embracing the very short stamens; styles united to the summit; stigmas 3; fruit globose, rather dry, 3–4-seeded.—*Walt. Car. p.* 101; *Michx.! fl.* 1. *p.* 153; *Pursh, fl.* 1. *p.* 166; *Ell. sk.* 1. *p.* 289; *DC. prodr.* 1. *p.* 27.

Banks of rivers, North Carolina! to Florida! west to the Rocky Mountains!—Usually a shrub, but sometimes (as in Palmetto Creek, Laurens County, Georgia, *Croom*) it becomes a tree 30–40 feet high. Leaves 3–6 inches long, and 1–2 inches wide, sometimes acuminate, irregularly serrate, the serratures often very indistinct; sometimes the margin is waved; lateral veins (10–12) rather distant. Umbels 5–15-flowered. Petals 2-lobed. Style rather short: stigmas minute. Fruit as large as a small pea, mostly 3-seeded. Seeds plano-convex, without a groove on one side.

9. *R. Purshianus* (DC.): erect, unarmed; leaves broadly elliptical, denticulate-serrate, pubescent beneath; umbels axillary, on peduncles longer than the petioles, pubescent; flowers perfect, pentandrous; petals minute, embracing the very short stamens; styles united to the summit; stigmas 3; fruit turbinate, 3-seeded.—*DC. prodr.* 2. *p.* 25; *Hook.! fl. Bor.-Am.* 1. *p.* 123, *t.* 43. R. alnifolius, *Pursh, fl.* 1. *p.* 166, not of *L'Her.*

Woods, Oregon, *Dr. Scouler! Nuttall!* Nootka, *Menzies.*—A shrub or small tree, 10–20 feet, with a trunk 9 inches in diameter. Leaves 3–5 inches long and 1½–2 inches in diameter, sometimes slightly cordate at the base, rarely acute or with a slight acumination; the lower surface strongly pubescent; the lateral veins (14–16) prominent. Umbels 10–20-flowered. Petals 2-lobed. Styles rather short. Fruit the size of a large pea, black. Seeds plano-convex, shining, without a groove.—Resembles R. Carolinianus but differs in its broader leaves, more numerous veins, longer peduncles, and larger pyriform fruit.

10. *R. ferrugineus* (Nutt.): leaves oblong-elliptical, acute, entire, the younger ones and calyx ferrugineous-tomentose; umbels axillary, sessile; flowers perfect, pentandrous; petals minute; style short; stigmas 3. *Nutt. in jour. acad. Philad.* 7. *p.* 90.

Near Key West, Florida, *Mr. T. R. Peale.* (ex *Nutt.*).—A shrub or small tree. Leaves about 2 inches long, slightly pubescent beneath in the adult state. Umbels 10–20-flowered in the axils of the petioles towards the end of the branches: pedicels 2–3 lines long. Calyx thickly clothed with rusty down. Petals at first involving the stamens. *Nutt.*—We have not seen this plant. Some of our specimens of R. Carolinianus agree very well with the description.

11. *R. Californicus* (Eschs.): branches angular, grayish-tomentose; leaves oval, serrulate, mostly acute, reticulately veined, glabrous on both sides; flowers fasciculate-umbelled; pedicels tomentose, as long as the petioles; calyx 5-cleft; petals 5, scale-like; style 5-cleft; fruit 2-seeded. *Eschscholtz, in mem. acad. St. Petersb.* 10. *p.* 281.

In bushy places, California, *Eschscholtz.*—A shrub about 12 feet high: stem terete, fuscous, nearly glabrous. Leaves 1½ inch long: petioles tomentose. Fascicles about 3-flowered. Petals yellowish-green. *Eschscholtz.*

12. *R.? Texensis:* much branched and straggling; branches pubescent; leaves ovate or oblong-ovate, somewhat acute, villous-pubescent on both sides, denticulate-serrulate, the veins prominent and very oblique (flowers solitary?); fruit broadly turbinate, 2–3-seeded; seeds tumid, without a furrow.

Texas, *Drummond!* (coll. 2. no. 67.) —Branches whitish, flexuous. Leaves about ¾ of an inch long, somewhat coriaceous, obtuse or a little acute at the base: petioles 1–2 lines long. Fruit 3–4 lines in diameter, with a very thin black pulp, obscurely lobed. Seed very smooth and shining.—We have not seen the flowers, but the plant appears to be a Rhamnus, and is very distinct from any species with which we are acquainted.

3. SAGERETIA. *Brongn. in ann. sci. nat.* 10. *p.* 359, *t.* 13. *f.* 2.

Calyx urceolate, 5-cleft. Petals convolute or cucullate. Stamens 5: anthers ovate, 2-celled. Ovary partly immersed in the slightly concave and entire disk, 3-celled: style short and thick, 3-lobed at the summit. Fruit somewhat baccate, indehiscent, 3-celled.—Shrubs with slender often spinescent branches. Leaves somewhat opposite, on short petioles. Flowers in simple or branched interrupted rigid spikes.

The character of the fruit (which was unknown to Brongniart) is drawn solely from E. Michauxii, and may not apply to all the species.

1. *S. Michauxii* (Brongn.): branches thorny when old; leaves opposite, membranaceous, ovate or oblong-ovate, nearly sessile, remotely denticulate-serrate, shining; flowers very minute, in paniculate spikes; petals minute, enclosing the stamens; stigmas nearly sessile; fruit 3-seeded.—*Brongn. l. c.* Rhamnus minutiflorus, *Michx.! fl.* 1. *p.* 154; *Pursh, fl.* 1. *p.* 166; *Ell. sk.* 1. *p.* 289; *DC. prodr.* [illegible] *p.* 28.

Along the coast from North Carolina to East Florida, *Michaux! Baldwin!* Oct.–Nov.—A shrub (6–8 feet high, *Ell.*). Leaves about an inch long, pubescent when young, at length nearly glabrous, acuminate; the lateral veins few. Petals entire. Fruit as large as a pepper-corn: endocarp rather thin and coriaceous. Seeds plano-convex, obcordate, smooth and even on both sides.—Our specimens are rather imperfect.

4. CEANOTHUS. *Linn.* (in part); *Gærtn. fr. t.* 106; *Brongn. l. c. p.* 369.

Calyx campanulate, 5-cleft; the upper portion at length separating by a transverse line; the tube adhering to the base of the ovary. Petals 5, longer than the calyx, saccate and arched, on long claws. Stamens exserted: anthers ovate, 2-celled. Disk fleshy at the margin, surrounding the ovary. Styles 3 (sometimes 2), united to the middle, diverging above. Fruit dry and coriaceous, mostly 3-celled (rarely 2–4- or by abortion 1-celled), obtusely triangular, girt below by the persistent tube of the calyx, tricoccous; the cells at length opening by the inner suture. Seeds obovate, without a lateral furrow.—Shrubs, or somewhat shrubby plants, not thorny. Roots large, reddish, astringent. Leaves alternate, commonly ovate or elliptical, serrate or entire, persistent or deciduous. Flowers (perfect) white, blue, or yellowish (the calyx and pedicels often colored), in umbel-like fascicles, which are aggregated at the extremity of the branches into small dense thyrsoid panicles or corymbs.

* *Leaves 3-ribbed from the base.*

1. *C. Americanus* (Linn.): leaves ovate or oblong-ovate, serrate, nearly glabrous above, canescently tomentose beneath, the petioles and veins beneath villous-pubescent; peduncles axillary, elongated; thyrsus oblong, leafless.—*Walt. Car. p.* 101; *Michx.! fl.* 1. *p.* 154; *Bot. mag. t.* 1479; *Pursh, fl.* 1. *p.* 167; *Ell. sk.* 1. *p.* 290; *DC. prodr.* 2. *p.* 31; *Hook. fl. Bor.-Am.* 1. *p.* 124; *Darlingt. fl. Cest. p.* 148. C. tardiflorus, *Hornem.?*

β. Pitcheri: leaves ovate, commonly obtuse, minutely canescent above, velvety-tomentose beneath, the veins of both surfaces hairy; peduncles often somewhat leafy.—C. Pitcheri, *Pickering! mss.*

γ. herbaceus: leaves oval, serrulate, nearly glabrous.—C. herbaceus, *Raf. in Desv. jour. bot.* 1. *p.* 227. C. perennis, *Pursh, l.* c. C. ovatus, *Desf. arb.* 2. *p.* 381?; *DC. l. c.?*

δ. intermedius: leaves small, ovate-oblong or oval, serrulate (otherwise as in *α.*); thyrus rather loose.—C. intermedius, *Pursh, l. c.?; DC. l. c.?; Ell. sk.* 1. *p.* 290, not of *Hook.*

Woods and copses, Canada! to Florida! and Louisiana! *β.* Arkansas and Missouri, *Dr. Pitcher! Nuttall!* Texas, *Drummond!* Alabama, *Dr. Gates!* *γ.* Southern States. *δ.* Georgia! to Florida! and west to Arkansas! June–July.—Root dark red. Stem shrubby or suffruticose, 1–3 feet high; the younger branches pubescent. Leaves 2–3 inches long (in *δ.* much smaller), rounded or rarely acutish, or sometimes a little cordate at the base, either acute, or slightly acuminate, or obtusish at the apex; the pubescence of the veins and petioles somewhat rusty-colored. Calyx, corolla, and pedicels (3–6 lines long) white. Claws of the petals filiform. Disk with a 10-toothed border. Seeds convex externally, deeply concave within; the cavity marked by an elevated longitudinal ridge. In *β.* & *δ.* the seeds are convex on both sides, and without a ridge: the difference is perhaps owing to their greater maturity in our specimens of the latter.—*New-Jersey Tea.*

2. *C. ovalis* (Bigel.): leaves narrowly oblong or elliptical-lanceolate, serrulate, with the teeth glandular, nearly glabrous; thyrsus umbel-like, the pedicels elongated and closely approximated; peduncles and branches glabrous or slightly pubescent.—*Bigel. fl. Bost. ed.* 2. *p.* 92; *Gray! in ann. lyc. New-York*, 3. *p.* 224. C. intermedius, *Hook. fl. Bor.-Am.* 1. *p.* 1. 24, not of *Pursh?*

β.? leaves (especially on the veins), young branches, and peduncles pubescent.

In barren rocky places, Canada! and Northern part of New-York! Michigan, *Dr. Pitcher!* Vermont along Lake Champlain, *Boott! Dr. Robbins! &c.* Maine, *Mr. Oakes!* *β.* Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!* May.—Shrub 2–3 feet high. Leaves 1–2½ inches long, varying from oval to almost linear, acute at both ends, sometimes obtuse at the apex, membranaceous, smooth and shining, or slightly pubescent on the veins beneath, usually pubescent when very young; the serratures tipped with black glands. Peduncles 1–2 inches long, naked or often with one or two leaves just below the flowers. Thyrsus almost hemispherical, an inch and a half in diameter. Flowers white, larger than in C. Americanus: pedicels 8–10 lines long, white. "Fruit blackish", *Bigelow;* in *β.* scarcely half as large as in C. Americanus, globose-turbinate, nearly the lower half invested with the adherent calyx-tube. In *β.?* the leaves are usually smaller, and the pubescence of the veins, &c. is somewhat ferrugineous.

3. *C. sanguineus* (Pursh): leaves obovate, pubescent beneath; panicles axillary, thyrsoid, on very short peduncles; pedicels aggregated. *Pursh, fl.* 1. *p.* 167; *Nutt. gen.* 1. *p.* 153; *DC. prodr.* 2. *p.* 32.

Banks of the Missouri, abundant below the confluence of the Platte, *Nuttall;* near the Rocky Mountains, *Lewis.*—Branches reddish.—A much larger plant than C. Americanus, which it considerably resembles. *Nutt.*

4. *C. Oreganus* (Nutt.! mss.): "leaves broadly ovate, subcordate, mostly obtuse, serrate, membranaceous, somewhat pubescent beneath; thyrsoid corymbs in lateral panicles; fruit small, globose, obtusely 3-lobed, without pulp.—C. sanguineus, *Hook.! fl. Bor.-Am.* 1. *p.* 125, not of *Pursh.*"

Woods of the Oregon, from the Blue Mountains to the Sea, *Douglas, Nuttall!* Fort Vancouver, *Dr. Scouler!*—A shrub 4–12 feet high; the stem and branches glabrous, reddish. Young leaves nearly obovate; the adult ones narrow at the summit, but scarcely acute, 1½–2½ inches long, 1–1½ inch wide, thin; veins moderately prominent. Panicles large, many-flowered, about 3 inches long, the lower divisions compound. Flowers larger than in C. Americanus, white. Fruit smaller than a peper-corn.—Very distinct from the preceding, according to Nuttall.

5. *C. velutinus* (Douglas): branches somewhat pendulous; leaves orbicular-elliptical or elliptical-ovate, obtuse, subcordate, glandularly crenate-serrulate, coriaceous, glabrous and shining (as if varnished) above, velvety-canescent and strongly 3-ribbed beneath; panicles axillary, elongated, on rather long peduncles.—*Hook. fl. Bor.-Am.* 1. *p.* 125, *t.* 45.

Subalpine hills near the sources of the Oregon, and at the "Kettle Falls", *Douglas;* hills of Bear River, near the 'Seltzer Springs', *Nuttall!*—A shrub 3–8 feet high, *Douglas* (scarcely more than knee-high, *Nutt.;* sometimes covering the whole declivity of a hill, forming a thicket very difficult to penetrate, *Nutt.*); branches nearly glabrous. Leaves 2–3 inches long, sometimes much larger, the lower surface almost velvety when young, but smoother when mature: petioles half an inch or more in length. Panicles thrice compound. Flowers white. "Fruit dry, 2–3-seeded; cocculi chartaceous", *Hooker.*—The leaves abound with an aromatic resin.

6. *C. incanus:* branches short and very thick, minutely canescent; leaves broadly ovate, obtuse, mostly subcordate, coriaceous, crenate-serrulate, mi-

nutely velvety above, whitish and canescent beneath; clusters subsessile, axillary and terminal.

California, *Douglas!*—Branches numerous, whitish with an exceedingly minute hoariness. Leaves an inch or more in length, rather crowded. Flowers white, in dense subglobose clusters, from very short and thick spurs or axillary branches.

7. *C. oliganthus* (Nutt. mss.): "stem and branches villous; leaves elliptical-ovate, nearly glabrous above, villous beneath, glandularly serrulate, rather obtuse; panicles lateral and terminal, very short, few-flowered, naked, or leafy towards the base, persistent; disk pentangular; ovary with 3 protuberances at the angles nearly as large as itself.

"Bushy woods on the hills of St. Barbara, California.—A shrub. Leaves on moderately long petioles. Clusters of flowers scarcely longer than the leaves. Flowers white, rather large". *Nuttall.*

8. *C. hirsutus* (Nutt. mss.): "somewhat spiny and almost hirsute, particularly the young branches; leaves cordate-ovate, glandularly serrulate, nearly sessile, rather obtuse; panicle terminal, elongated, leafy; disk obscurely pentangular; protuberances of the ovary small.

In thickets, with the preceding, to which it is nearly allied.—A straggling shrub. Young branches, leaf-buds, and bracts very hairy; the upper surface of the leaves also almost villous. Fruit rather small." *Nuttall.*

9. *C. thyrsiflorus* (Eschs.): stem straight and erect, with angular branches; leaves ovate-oblong, obtuse, rather thick, strongly veined beneath, glandularly serrate, glabrous or slightly hairy above, canescent beneath and minutely pubescent on the veins; flowers in ovate or oblong very dense clusters, on long more or less leafy axillary and terminal peduncles.—*Eschs. in mem. acad. St. Petersb.* (1826); *Hook. fl. Bor.-Am.* 1. *p.* 125; *Hook. & Arn. in bot. Beechey, p.* 136.

Monterey, Upper California, *Eschscholtz, Douglas! Nuttall!* North West Coast, *Menzies.*—A small tree, with a stem sometimes as thick as a man's arm: branches strongly angular. Leaves 12–15 lines long, 4–6 lines wide, narrowed at the base; petioles about 2 lines long. Clusters 1–2 inches long; the flower-buds at first surrounded by numerous ovate woolly bracts, most of which at length fall off. Calyx and corolla bright blue even when dry.

10. *C. microphyllus* (Michx.): stem much branched from the root; leaves minute, obovate, rigid, fascicled, glabrous above, strigose below, entire or sparingly denticulate; peduncles slender; thyrsus short, nearly simple, rather loose.—*Michx.! fl.* 1. *p.* 154; *Pursh, fl.* 1. *p.* 167; *Nutt.! gen.* 1. *p.* 154; *Ell. sk.* 1. *p.* 292; *DC. prodr.* 2. *p.* 32.

Sandy pine forests, Georgia! to East Florida! April.—Stems 1–2 feet high, rather rigid, glabrous, yellowish. Leaves 2–3 lines long. Peduncles 1–2 inches long. Flowers white.

11. *C. serpyllifolius* (Nutt.): decumbent, diffusely branched; branches filiform; leaves very small, ovate-elliptical, serrulate, obtuse, the lower surface, as well as the petioles, strigose; peduncles axillary; flowers few, in a simple corymbose head.—*Nutt.! gen.* 1. *p.* 154; *DC. prodr.* 2. *p.* 32.

Near St. Mary's, Georgia, *Baldwin!*—A very small slender species. Leaves 3–5 lines long; the upper surface nearly glabrous; the early ones somewhat crowded; later ones rather distant. Peduncles 1–1½ inch long, 12–15-flowered. Flowers white.

12. *C. divaricatus* (Nutt.! mss.): "somewhat thorny, nearly glabrous; leaves elliptical-oblong or oblong-ovate, lucid, somewhat obtuse, minutely and glandularly serrulate, pubescent (particularly on the nerves) beneath;

flowering branches divaricate; leafy thyrsus interrupted; rather loose; ovary subglobose, without protuberances.

"Mountains of St. Barbara, California, and also near the town. April.—A straggling shrub. The abortive branchlets at length become spinose. Leaves 8–12 lines long, somewhat coriaceous, 3-nerved from the base, the lateral nerves obscure: petioles about 2 lines long. Thyrsus oblong, with several remote fascicles in the axils of the leaves. Flowers blue. Fruit about the size of a peper-corn." *Nuttall.*

* * *Leaves* 1-*ribbed, pinnately veined.*

13. *C. spinosus* (Nutt.! mss.): "glabrous; branches thorny; leaves cuneate-oblong, or oblong, obtuse or emarginate, lucid, entire, or obscurely glandularly serrulate towards the apex; flowering branchlets divaricate, leafy; thyrsus oblong; ovary subglobose, without protuberances.

Mountains of St. Barbara.—A straggling shrub. Leaves somewhat coriaceous, obscurely veined, pubescent beneath in the young state, 8–10 lines long. Flowers white or blue: pedicels 2–3 lines long." *Nuttall.*—Nearly allied to the preceding species. There is a pair of obscure nerves from the base of the leaf; but they are scarcely as large as the veins which proceed from each side of the midrib.

14. *C. cuneatus* (Nutt.! mss.): "branchlets pubescent; leaves fascicled from numerous very short lateral branches, and apparently opposite, thick and coriaceous, narrowly oblong-cuneiform, entire, obtuse, glabrous above, whitish and minutely tomentose-canescent beneath; flowers in lateral pedunculate nearly simple umbels; fruit with 3 projecting appendages at the summit."—Rhamnus? cuneatus, *Hook. fl. Bor.-Am.* 1. *p.* 124; *Hook. & Arn. in bot. Beechey, p.* 136.

Dry gravelly islands and bars of the Wahlamet above the Falls, *Nuttall! Douglas.* California, *Beechey.* March.—A shrub 6–10 feet high, with somewhat thorny grayish terete branches, very closely interwoven, sometimes forming thickets. Leaves half an inch or more in length, and about 2 lines wide, very rarely with one or two teeth near the extremity; the numerous regular simple and oblique veins rather conspicuous on the lower surface. Flowers in small axillary umbels: the peduncles and pedicels increasing in length as the fruit ripens. Calyx and corolla white: petals cucullate, unguiculate. Styles united above the middle, and then spreading. Fruit as large as an ordinary pea, subglobose; the exocarp somewhat pulpy, with 3 rather soft horn-like projections from the summit of the angles: the coherent base of the calyx unusually large. Seeds even on both sides, black, polished.—The whole plant (like several succeeding species) exhales a balsamic odor, and the mature fruit is covered with a bitter varnish. Hooker describes the branches as ferrugineous, which is not the case in our specimens: they are so, however, in the C. macrocarpus, which, judging from our specimen, we were certainly inclined to unite with the present species; but Mr. Nuttall assures us that it is perfectly distinct.

15. *C. macrocarpus* (Nutt.! mss.): "branchlets canescent with a rusty-colored pubescence; leaves alternate, rather crowded, sometimes a little fascicled in the axils, thick and coriaceous, obovate-cuneate, entire, often emarginate glabrous above, whitish and minutely tomentose-canescent beneath; flowers in lateral pedunculate nearly simple umbels; fruit very large, with three projecting horn-like appendages at the summit."

Mountains of St. Barbara, California, *Nuttall!*—A shrub 3–6 feet high. Fruit twice or thrice as large as in the preceding.

16. *C. verrucosus* (Nutt.! mss.): "branches verrucose, and (as also the viens of the lower surface of the leaves) somewhat canescent with a rusty-

colored pubescence; leaves alternate, approximate or crowded, very thick and coriaceous, roundish-obovate or cuneate-oval, often emarginate, the younger ones sometimes obscurely serrulate, glabrous above, minutely tomentose-canescent beneath; umbels axillary, few-flowered, naked; fruit with minute protuberances at the angles.

"Low hills near the coast, St. Diego, California.—Leaves about half an inch long, and 4–5 lines wide, similar to the preceding in texture, venation, &c. Flowers white. Fruit the size of a large pea." *Nutt.*—Very near C. cuneatus *β*., and perhaps only another variety of that species; from which it differs, however, in its broader leaves and tuberculate stems, as well as in the minute tubercles of the fruit.

17. *C. rigidus* (Nutt.! mss.): "young branches pubescent; leaves opposite and crowded, cuneate-obovate, mostly retuse, thick and coriaceous, mucronately crenate-toothed, glabrous above, somewhat canescent beneath; umbels axillary and terminal, few-flowered, sessile; pedicels at length elongated; ovary with 3 protuberances.

"Bushy woods near Monterey, California. March.—A shrub about 6 feet high, rigid, intricately branched, almost spinose. Leaves about half an inch long, sometimes nearly obcordate; teeth conspicuous; the veins, &c. as in the preceding. Clusters of flowers composed of several small crowded umbels; the pedicels gradually elongating to the length of 3–4 lines. Calyx and corolla bright blue." *Nuttall.*—Resembles the last two species in many respects. [illegible] much strong stalked glands.

18. *C. dentatus:* branches (and veins of the leaves beneath) tomentose with rusty hairs; leaves much crowded and fascicled, coriaceous, oblong-cuneiform, retuse, toothed, with revolute margins, more or less hairy on both sides; peduncles elongated, nearly terminal; thyrsus oblong, of numerous umbel-like fascicles; ovary with three protuberances at the summit.

California, *Douglas!*—Leaves scarcely half an inch long, strongly and remotely feather-veined, pitted beneath, irregularly and obtusely toothed. Peduncles an inch or more in length. Flowers crowded, white.

19. *C. papillosus:* branches tomentose; leaves narrowly oblong, much crowded, fascicled in the axils, densely and softly tomentose beneath, glandularly denticulate on the margin; peduncles aggregated; clusters somewhat capitate; ovary triangular, the angles projecting at the summit.

California, *Douglas!*—Branches terete. Leaves 1–1¼ inch long (those fascicled in the axils smaller), fringed on the margin with numerous capitate glandular teeth; the upper surface conspicuously papillose and somewhat hairy. Peduncles numerous at the summit of the branches; the flower-buds at first invested with ovate woolly bracts: pedicels 2–3 lines long. Flowers blue.

[illegible] Bot. Mag. t. 4[illegible] 1854
[illegible]

ORDER XLVIII. LEGUMINOSÆ. *Juss.*

Sepals united into a 5-cleft or 5-toothed calyx; the segments often unequal or variously combined, the odd one inferior. Petals 5 (sometimes by abortion fewer or wanting), perigynous or hypogynous, irregular and unequal (papilionaceous), or sometimes regular, distinct or variously cohering; the odd petal superior. Stamens definite or indefinite, inserted with the petals, distinct, or monadelphous, or diadelphous, or very rarely triadelphous: anthers versatile. Ovary simple,

solitary (very rarely 2 or more), free from the calyx: ovules solitary or several: style proceeding from the upper or ventral suture: stigma simple. Fruit a legume, or sometimes a drupe. Seeds solitary or several, heterotropous or anatropous, sometimes with an aril or large caruncle: albumen none. Embryo straight, or with the radicle bent back along the edge of the cotyledons: cotyledons either thin and somewhat foliaceous, or thick and fleshy.—Herbs, shrubs, or trees. Leaves alternate, stipulate, usually compound, sometimes reduced to a solitary leaflet: the margin of the leaves or leaflets almost always entire. Flowers axillary or terminal, solitary or commonly racemose, paniculate, spicate, or capitate: pedicels usually articulated.

SUBORDER I. PAPILIONACEÆ. *Linn.*

Sepals imbricated (or sometimes slightly valvate) in æstivation. Corolla papilionaceous or more or less irregular, rarely wanting. Stamens 10, or occasionally fewer, inserted with the petals into the bottom of the calyx, or perigynous. Radicle bent back upon the edge of the cotyledons, or straight.—Leaves simple or simply compound (in Cassieæ sometimes bipinnate). Flowers usually perfect.

TRIBE I. VICIEÆ. *Bronn; DC.*

Corolla papilionaceous. Stamens diadelphous (9 and 1). Legume continuous (not articulated), dehiscent. Radicle inflexed. Cotyledons thick, farinaceous, remaining under ground unchanged in germination.—Herbs, with abruptly pinnate leaves; the common petiole not articulated with the stem, produced at the apex into a bristle or tendril.

1. VICIA. *Tourn. inst. t.* 221; *DC. prodr.* 2. *p.* 354.

Calyx tubular, 5-cleft or 5-toothed; the two upper teeth shortest. Style filiform, bent at a right angle with the ovary, villous at the apex, particularly on the outside (next the keel). Legume oblong, several-seeded.—Mostly climbing herbs. Leaflets several pairs. Petioles produced into branching tendrils. Peduncles axillary.—*Vetch.*

* *Peduncles elongated.*

1. *V. Americana* (Muhl.): glabrous; leaflets numerous (10–14), elliptical-lanceolate or ovate-oblong, obtuse or retuse, mucronate; stipules semisagittate, deeply toothed; peduncles shorter than the leaves, 4–8-flowered, lower teeth of the calyx broadly lanceolate; style very villous at the apex; legumes linear-oblong, compressed, reticulated, glabrous.—*Muhl. in Willd. sp.* 3. *p.* 1096; *Pursh, fl.* 2. *p.* 471; *DC. l. c. p.* 355; *Hook. ! fl. Bor.-Am.* 1. *p.* 157.
β. leaflets elliptical-lanceolate, somewhat rigid, strongly reticulated; peduncles 2–5-flowered.—*Hook. ! l. c.* V. sylvatica, *Nutt. gen.* 2. *p.* 97?

Canada! (as far north as Bear Lake) to the Western part of New-York! and west to the Rocky Mountains! β. Saskatchawan, &c. *Hooker!* Missouri!—♃ Stem 1–3 feet long. Leaflets 8–14 lines long: tendrils 3- many-parted. Flowers about three-fourths of an inch long, purplish-blue. Upper teeth of the calyx very short.—Very near V. sylvatica.

2. *V. Oregana* (Nutt.! mss.): "pubescent; stem weak; leaflets 4–8 pairs, elliptical-oblong, somewhat serrate at the summit, cuspidate, rarely emarginate; stipules lunate, semisagittate, incisely serrate; peduncles 3–5-flowered, rather shorter than the leaves; teeth of the calyx ovate-lanceolate, acuminate, the 2 upper nearly as long as the lateral ones; style slightly pubescent; legume broadly sabre-shaped, glabrous, about 5-seeded.

"Plains of the Oregon.—♃ Stem 1–2 feet long, angular. Leaflets about ¾ of an inch long: tendrils many-parted. Flowers one-third smaller than in the preceding species." *Nuttall.*

3. *V. truncata* (Nutt.! mss.): "somewhat pubescent; leaflets 5–6 pairs, oblong-linear, usually truncate, serrate or tridentate at the apex; stipules lunate, incisely serrate; peduncles 4–7-flowered, rather shorter than the leaves; lower teeth of the calyx lanceolate, acuminate, the upper ones very short; style very villous at the apex.

Plains of the Oregon. June.—♃ Stem 1–2 feet high, weak. Leaflets about an inch long, 1–2 lines wide; the lowest ones simply acute and apiculate; the upper ones strongly serrate or toothed at the apex." *Nuttall.*

4. *V. sparsifolia* (Nutt.! mss.): slightly pubescent; leaflets 5–6 pairs, narrowly linear, nearly acute, mucronulate; stipules bifid, entire, or sparingly toothed; peduncles 4–7-flowered, about as long as the leaves; lower teeth of the calyx acuminate; upper ones much shorter; style very villous at the summit.

"Plains of the Oregon, with the preceding; to which it is very nearly allied." *Nuttall.*

5. *V. gigantea* (Hook.): somewhat pubescent; stem sulcate; leaflets 10–13 pairs, oblong, petiolulate, obtuse, mucronate; stipules large, semisagittate, deeply toothed at the base; peduncles much shorter than the leaves, 5–18-flowered, the flowers crowded; lower teeth of the calyx long and narrow; style slightly bearded; legume broadly oblong, glabrous, obscurely reticulated.—*Hook.! fl. Bor.-Am.* 1. *p.* 157. V. Sitchensis, *Bong.! veg. Sitcha, in mem. acad. St. Petersb.* (6. *ser.*) 2. *p.* 129. V. Nuttalliana, Walp.

Woods of the Oregon, *Scouler! Nuttall!* Sitcha, *Bongard!*—♃ Stem stout, long and trailing. Leaves 6–9 inches long: leaflets 1–2 inches in length. Flowers nearly as large as in V. Americana, pale dull purple. Legumes about 2½ inches long. Seeds as large as small peas, tolerably good eating when young.—Plant blackish when dry.

6. *V. Cracca* (Linn.): stem branching; leaflets numerous (20–24), oblong, minutely pubescent, mucronate; stipules lanceolate-linear, semisagittate; peduncles many-flowered, about as long as the leaves, flowers crowded, retrorsely imbricated; teeth of the calyx shorter than the tube, the upper ones very short; style hairy at the summit; legume oblong, coriaceous, reticulated, glabrous; seeds globose, black.—*Michx.! fl.* 2. *p.* 69; *Pursh, fl.* 1. *p.* 472; *DC. prodr.* 2. *p.* 357; *Bigel. fl. Bost. p.* 269; *Hook. fl. Bor.-Am.* 1. *p.* 157.

Borders of woods, &c. Canada! to Pennsylvania! west to Kentucky!—April–June.—♃ Stem 2–3 feet long. Leaflets 6–8 lines in length. Racemes 12–30-flowered. Flowers nearly half an inch in length, usually bright blue, but sometimes rather pale. Legume about an inch long, 4–6-seeded.—Agrees in every respect with the European plant.

7. *V. Caroliniana* (Walt.): stem branching; leaflets 8–12, linear-oblong, nearly glabrous, rather obtuse, scarcely mucronate; stipules lanceolate, minute; peduncles many-flowered; racemes rather loose; teeth of the calyx shorter than the tube, the upper ones very short; style hairy at the summit; legume oblong, coriaceous, not reticulated; seeds subglobose, blackish.—*Walt. Car. p.* 182; *Pursh, fl.* 2. *p.* 472; *Ell. sk.* 2. *p.* 224; *DC. prodr.* 2. *p.* 355. V. parviflora, *Michx.! fl.* 2. *p.* 69, not of *Cav.*

β.? Texana: very slender; leaflets 8–10, nearly linear; stipules unequally bifid at the base; peduncles 6–10-flowered, longer than the leaves; flowers crowded.

Borders of woods and banks of rivers, Canada! to Georgia! west to Kentucky! April–May.—♃ Stem 3–6 or 8 feet long, slender, climbing. Leaflets usually scattered, 6–10 lines long. Racemes 6–15-flowered; the flowers white, or pale blue, with the top of the keel deep blue, commonly smaller than in the preceding species, and more loosely arranged on the peduncle.—The most certain distinguishing character is found in the shorter and broader teeth of the calyx of this species. The Texan variety may prove to be distinct; but we have not seen the legumes.

8. *V. Ludoviciana* (Nutt. mss.): glabrous (except the young shoots); leaflets 10–12, elliptical or obovate, obtuse or emarginate; stipules subulate, simple or semisagittate; peduncle 2–6-flowered, at length longer than the leaves; flowers (minute) closely approximated; teeth of the calyx broad, acuminate, shorter than the tube; legume broadly sabre-shaped, glabrous, 5–6-seeded; seeds compressed, dark brown.

Grassy places on the Red River, and in Texas, *Dr. Leavenworth!* "In Louisiana, *Mr. Tainturier,*" *Nuttall.* May.—♃ Stem 2–3 feet long, rather stout, strongly angled, climbing. Leaflets 6–8 lines long, 2 lines wide, commonly emarginate. Stipules very small. Flowers blue, smaller than in V. Cracca, rarely solitary, often 2–6 on a peduncle. Calyx hairy. Keel marked with a deep blue spot at the summit. Legume ¾ of an inch long and 3 lines wide.—Mr. Nuttall in his manuscript describes the peduncles as 1–2-flowered, which is the case in some of our specimens; but the peduncles are more commonly at least 4-flowered.

9. *V. Leavenworthii:* pubescent; leaflets 10–14, oblong-linear, obtuse or emarginate; stipules minute, semisagittate, entire; peduncles shorter than the leaves, 2–4-flowered (flowers minute); teeth of the calyx subulate, somewhat equal, all longer than the tube; style slightly pubescent at the summit; legume oblong, 6-seeded.

Arkansas, *Dr. Leavenworth!*—♃ ? Stem 1–2 feet long, strongly angled. Leaflets approximated, half an inch long and 1½ line wide. Flowers as large as in V. tetrasperma, pale blue?—Resembles the last two species, but is easily distinguished by the long and narrow teeth of the calyx.

10. *V. micrantha* (Nutt.! mss.): glabrous; leaflets 4–7, linear, obtuse or acute; stipules lanceolate, semisagittate; peduncles shorter than the leaves, 1–2-flowered (flowers minute); teeth of the calyx lanceolate, shorter than the tube; legume sabre-shaped, 7–10-seeded.

Prairies and woods of Arkansas, *Nuttall!* Louisiana and Texas, *Dr. Leavenworth!* on the Red River, *Dr. Hale!* April–May.—① ? Stem slender, 2–3 feet long. Leaflets about an inch long; in the lower leaves truncate and often toothed at the summit. Flowers as large as in the preceding species (pale blue?); the peduncles at first scarcely one-third the length of the leaves. Style very short. Legumes an inch in length, slightly pubescent. Seeds blackish, compressed; the hilum extending ⅔ of its circumference.

11. *V. acutifolia* (Ell.): glabrous; leaflets 3–6, linear, usually acute; stipules linear-lanceolate, semisagittate, entire; racemes longer than the leaves,

3–7 flowered; lower teeth of the calyx ovate-lanceolate, shorter than the tube, the upper ones very short; legume slightly falcate, 4–8-seeded.—*Ell. sk.* 2. *p.* 225; *DC. prodr.* 2. *p.* 357. V. lutescens, *Muhl. cat.* fide *Leconte.* V. paucifolia, *Nutt.! mss.*

β. leaflets elliptical, obtuse; peduncles shorter, about 2-flowered.

Low grounds, Georgia, *Le Conte!* Middle Florida, *Dr. Chapman! Nuttall!* Near St. Marks, *Dr. Leavenworth!* St. John's, Florida, *Mr. Doubleday!* —①? Stem 2–3 feet long, climbing very slender. Leaflets 6–10 lines long, scarcely a line wide. Tendrils usually undivided. Flowers half as large as in V. Cracca, white, tinged with blue.

12. *V. tetrasperma* (Loisel.): stem somewhat cæspitose, glabrous; leaflets 4–6, oblong; stipules lanceolate, semisagittate; peduncles usually 2- (sometimes 1- or 3–4-) flowered; teeth of the calyx lanceolate, shorter than the tube, the sinuses acute; legume oblong, glabrous, usually 4-seeded.—*Loisel. fl. Gall.* 1. *p.* 460. V. pusilla, *Muhl. in Willd. sp.* 3. *p.* 1106; *Pursh, fl.* 2. *p.* 471; *Bigel. fl. Bost. p.* 270. Ervum tetraspermum, *Linn.; DC. prodr.* 2. *p.* 367; *Hook. fl. Bor.-Am.* 1. *p.* 158.

Banks of rivers, Canada! to New Jersey! Pennsylvania, *Muhlenberg.* July.—① Stem 1–2 feet long, very slender. Leaflets 5–10 lines long, and one line wide, mostly obtuse. Tendrils divided. Peduncles filiform. Flowers very small, white, often with a tinge of blue. Legumes half an inch long, sometimes 5-seeded. Seeds subglobose.

13. *V. exigua* (Nutt.! mss.): "pubescent; leaflets 6–8, linear-oblong, rather obtuse; stipules narrow, semisagittate, entire or incisely serrate; peduncles filiform, 1- (sometimes 2-) flowered, shorter than the leaves; teeth of the calyx lanceolate, broad at the base, shorter than the tube, the sinuses obtuse; legume oblong, glabrous, 4–5-seeded.

"Plains of the Oregon and Upper California. Very much resembling the preceding species.—The plant from Oregon is more slender and the leaflets narrower." *Nuttall.*

* *Flowers nearly sessile.*

14. *V. sativa* (Linn.): somewhat pubescent; stem simple, decumbent or climbing; leaflets 10–12, varying from obovate-oblong to linear, retuse, mucronulate; stipules semisagittate, somewhat toothed; tendrils branched; flowers solitary or in pairs; calyx cylindrical; the segments as long as the tube, lanceolate-subulate, nearly equal; style short, bearded at the apex; legumes compressed, torulose, erectish, reticulated; seeds orbicular, somewhat compressed.—*Eng. bot. t.* 334; *Michx.! fl.* 2. *p.* 69; *Pursh, fl.* 2. *p.* 270; *DC. prodr.* 2. *p.* 360; *Bigel. fl. Bost. p.* 270; *Hook. l. c.*; *Darlingt. fl. Cest. p.* 425. V. Canadensis, *Zuccagni; DC. l. c.?*

δ. *angustifolia* (Seringe, in DC. l. c.): leaflets narrowly linear and elongated, obtusish or slightly retuse, mucronate; seeds nearly globose. V. sativa β. *Linn.* V. angustifolia, *Roth.*

Cultivated fields and waste places; common: introduced from Europe. δ. Bordentown, New Jersey, *Mr. Durand!* June–July.—① Corolla about half an inch long, pale violet-purple. Legume 1–2 inches long, usually minutely hairy.—*Common Vetch. Tare.*

‡. *Doubtful species.*

15. *V. tridentata* (Schwein.): stem sulcate, somewhat pubescent; leaflets numerous, narrowly oblong, entire, obtuse, mucronulate, sparingly hairy above, densely hairy beneath; lower stipules cuneiform, broadly 3-cleft, 3-

nerved, pubescent; the upper ones lanceolate, acuminate, villous; calyx and pedicels pubescent. *Schwein. in Long's 2nd exped. app.*

Upper Mississippi, *Mr. Keating.*

2. ERVUM. *Linn.; Juss. gen. p.* 360.

Calyx deeply 5-cleft; the segments nearly equal, linear, acute, about the length of the corolla. Style filiform: stigma glabrous. Legume oblong, 2–4-seeded. Seeds orbicular or globose.—Annuals. Leaflets usually numerous. Petioles produced into tendrils. Peduncles axillary.

1. *E. hirsutum* (Linn.): stem branching, diffuse; leaflets 8–20, linear, tapering at the base, truncate or retuse at the apex, mucronulate; stipules subulate, semisagittate, entire or cleft; peduncles 3–6-flowered, about the length of the leaves; calyx hairy, the subulate segments rather shorter than the corolla; legumes oblong, obliquely truncate, torulose, hirsute, 2-seeded, drooping.—*Torr.! compend. p.* 264; *DC. prodr.* 2. *p.* 366; *Darlingt. fl. Cest. p.* 426; *Hook. fl. Bor.-Am.* 1. *p.* 158. Vicia Mitchelli, *Raf. prec. decouv. p.* 37; *Ell. sk.* 2. *p.* 224; *DC. prodr.* 2. *p.* 360.

Thickets and banks of streams, New-York! Pennsylvania, S. Carolina: probably introduced. May–June.—Stem 1–3 feet long, very slender, climbing. Flowers very small, bluish-white. Seeds subglobose, somewhat compressed.

3. LATHYRUS. *Linn.; DC. prodr.* 2. *p.* 369.

Calyx campanulate, 5-cleft; the two upper segments somewhat shortest. Style usually somewhat flattened, and dilated above, bent nearly at a right angle with the ovary, pubescent or villous along the inside (next the free stamen). Legume oblong, several-seeded.—Mostly climbing herbs. Leaflets 1–several pairs. Petioles produced into tendrils. Peduncles axillary.

§ 1. *Annual: peduncles* 1–3-*flowered.*

1. *L. pusillus* (Ell.): glabrous; stem branching from the base, winged; leaflets a single pair, linear-lanceolate, acute at each end, slightly mucronate; stipules rather large, sagittate, slightly falcate; peduncles elongated, 1–2-flowered; tendrils branching; segments of the calyx subulate-setaceous, nearly equal; legume elongated, slightly falcate, 10–15-seeded.—*Ell. sk.* 2. *p.* 223.

S. Carolina, *Elliott*: common also in Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* Texas and Western Louisiana, *Dr. Leavenworth!* April–May.—A small slender vine. Leaflets 1½–2 inches long. Stipules unequally sagittate, nearly an inch in length.

§ 2. *Perennial: peduncles several-flowered.*

2. *L. maritimus* (Bigel.): mostly glabrous; stem stout, angled, at length decumbent; leaflets 4–6-pairs, oval or slightly obovate; stipules cordate-hastate, nearly the size of the leaflets; peduncles many- (6–10-) flowered, rather shorter than the leaves; segments of the calyx hairy on the margin, the two upper ones triangular and shorter, the others lanceolate; corolla purple; legumes oblong, at length rather turgid, slightly falcate.—*Bigel.! fl. Bost. ed.* 2. *p.* 268. L. venosus, *Brit. fl. gard.* (*ser.* 2.) *t.* 37; *Bigel. l. c. ed.* 1. L. Californicus, *Dougl.; Lindl. bot. reg. t.* 1144, fide *Hook.* L. pisiformis,

Hook.! fl. Bor.-Am. 1. *p.* 158; *Hook. & Arn.! bot. Beechey, p.* 123. Pisum maritimum, *Linn.; Eng. bot. t.* 1047; *DC. prodr.* 2. *p.* 368 (*β.* glabrum, *Ser.*); *Bong. veg. Sitcha, l. c. p.* 130.

Sandy or stony shores, from Labrador to New-York! and from Kotzebue's Sound! to Oregon! and California: also around the shores of the Great Lakes! and along the rivers, &c. to the shores of the Arctic Sea (*Richardson*). May–July.—The whole plant has a somewhat glaucous aspect, and much the habit of a Pea. The leaflets (often scattered) are commonly from 1½ to 2 inches in length, and ¾–1 inch wide, with reticulated veins; in shady situations the stem is more slender, less leafy, and the leaflets rather smaller. Stipules usually toothed below, cordate-hastate, the lower angle or lobe acute, often more or less inequilateral. Peduncles 6–10-flowered. Flowers large and showy, purple; the wings and keel paler. Lower segment of the calyx linear, a little narrower, and slightly exceeding the lateral ones. The specimens from Arctic America are smaller and fewer-flowered.—Our specimen of L. pisiformis from Altaic Siberia, communicated by Prof. Fischer, differs from our various forms of the plant above described in having a narrowly winged stem, much larger and *semi*sagittate stipules, and somewhat ovate-oblong leaflets. We perceive no other difference of any importance; but, as these may be expected to prove nearly constant, we have thought it best to retain the specific name of Bigelow for the present, since our plant is doubtless the same as the Pisum maritimum of the North of Europe.

3. *L. polyphyllus* (Nutt.! mss.): "glabrous; stem nearly erect; angled, leaflets 5–8 pairs, oval-oblong, obtusish, the tendrils very short; stipules as large as the leaflets, semicordate, angularly crenate at the base, sometimes acuminate; peduncles 7–10-flowered; shorter than the leaves; segments of the calyx hairy on the margin, the two upper ones triangular and much shorter than the lanceolate lateral ones, the inferior one subulate-setaceous, rather longest; corolla purple; legume smooth, acuminated, long and flat.

"*β.* angles of the stem acute; stipules broadly semisagittate.

"Forests of the Oregon to the sea; in shady places.—Stem about 2 feet high. Leaflets 1½ inch long, and half an inch or more wide. Flowers rather large.—Considerably allied to L. pulchellus of Altai, but with more flowers on the peduncle." *Nutt.*—This plant is probably included by Hooker among the "more lax and flaccid forms of L. pisiformis apparently inhabiting woody districts;" and we should incline to take the same view of it; but the setaceous inferior segment of the calyx, and the rather shorter superior teeth will perhaps prove a constant distinction.

4. *L. venosus* (Muhl.): glabrous or somewhat pubescent; stem erect or reclined, strongly 4-angled; leaflets 5–7 pairs, ovate-oblong or broadly ovate-elliptical, obtuse; stipules very small, lanceolate or oval, semisagittate (the deflexed lobe about as long as the superior portion); peduncles many- (8–16-) flowered, rather shorter than the leaves; calyx pubescent or nearly glabrous; the 2 upper segments very broad and short (not half the length of the lateral ones); corolla purple; legumes linear-oblong, compressed.—*Muhl. in Willd. sp.* 3. *p.* 1092, & *cat. p.* 68; *Pursh, fl.* 2. *p.* 471; *Nutt. gen.* 2. *p.* 96; *DC. prodr.* 2. *p.* 371.

β. robust; leaflets larger (2–3 inches long), oblong-ovate; stipules linear-lanceolate; peduncles 10–20-flowered.

γ. minutely downy-pubescent; leaflets rather broadly elliptical or ovate-elliptical; stipules linear-lanceolate; peduncles 10–20-flowered; calyx and pedicels densely pubescent.—L. decaphyllus, *Hook.! fl. Bor.-Am.* 1. *p.* 159, & *in bot. mag. t.* 3123; *Hook. & Arn. bot. Beechey, p.* 138, not of *Pursh.* L. multiflorus, *Nutt.! mss.*

δ.? smaller, finely pubescent; leaflets 3–5 pairs, ovate-elliptical, smaller; stipules linear-lanceolate; peduncles 5–7-flowered.—L. pubescens, *Nutt.! mss.* L. decaphyllus *β.* minor, *Hook. & Arn. l. c.*?

Shady places, and along streams, Canada to the Western part of Georgia! Western Louisiana, *Dr. Leavenworth!* β. Georgia, *Dr. Boykin!* γ. Saskatchawan, (*Richardson, Drummond*) to the shore of Lake Superior, *Dr. Houghton!* and Illinois, ex *Nuttall:* also N. W. Coast and California, ex *Hooker.* δ. Bushy woods of the Oregon, *Nuttall!* June–July.—Stem about 3–4-angled and striate, 2–3 feet high. Petioles channelled above. Leaflets in α. & γ. about 1½–2 inches long; in β. larger, somewhat conspicuously reticulate-veined above when old. Flowers smaller than in the two preceding species, racemose, crowded. Lateral segments of the calyx triangular-lanceolate, a little shorter than the somewhat narrower lower segment; the upper ones broadly triangular and extremely short.—A widely diffused species, if we are correct in joining with it the L. decaphyllus of Hooker, &c, readily distinguished by its very small stipules, These are however a little variable in the ordinary form, even in the same specimen; the upper ones being often larger and broader.

5. *L. ochroleucus* (Hook.): glabrous, pale and a little glaucous; stem slender; leaflets about 3 pairs, broadly oval or ovate; stipules semicordate; smaller than the leaflets, entire or obtusely toothed below; peduncles 7–10-flowered, shorter than the leaves; calyx somewhat truncate above; the upper segments broadly triangular, scarcely half the length of the oblong lateral ones; the lower lanceolate and a little longest; corolla yellowish-white; legumes linear-oblong, compressed, glabrous.—*Hook.! fl. Bor.-Am.* 1. *p.* 159; *Gray! in ann. lyc. New-York,* 1. *p.* 225. L. glaucifolius, *Beck, bot. p.* 90. L. pisiformis, *Richards.! in app. Frankl. journ. ed.* 2. *p.* 28.

Shady hill-sides and banks of streams &c., from the Arctic circle, *Dr. Richardson!* (Bear Lake) to the Western and Northern part of New-York! and New Jersey! June–July.—A smaller and more delicate plant than the preceding, straggling or somewhat climbing. Leaflets 1–1½ inch in length, thin and membranaceous. Stipules either rounded at the base, or with an acute angle, somewhat variable in size; the lower ones considerably smaller than the leaflets; the uppermost often nearly their size, particularly in the subarctic forms. In the latter, also, the peduncles are nearly as long as the leaves. Segments of the calyx minutely hairy on the margin. Flowers about as large as in L. venosus.

6. *L. myrtifolius* (Muhl.): glabrous; stem slender, acutely quadrangular and often slightly winged; leaflets 2–3 pairs, oval-elliptical or oblong, obtuse at each end; stipules ovate-semisagittate, smaller than the leaflets, nearly entire; peduncles 3–6-flowered, longer than the leaves; upper segments of the calyx broad and shortest, the others triangular-lanceolate; corolla pale purple (the wings and keel whitish); legumes (immature) oblong-linear, compressed, glabrous.—*Muhl. in Willd. sp.* 3. *p.* 1091; *Pursh, fl.* 2. *p.* 471; *DC. prodr.* 2. *p.* 371; *Hook. l. c.* L. stipulaceus, *Le Conte! in cat. pl. New-York, p.* 92; *DC. l. c.; Hook. l. c.*

Banks of rivers, &c., Canada! Vermont! to New-York! and Pennsylvania. July–Aug.—More or less climbing. Stem 2–4 feet long. Flowers the size of the preceding.—We have drawn up the character from the ordinary and well-marked forms of this species; but we have varieties which so nearly approach to L. palustris that we are unable to point out any certain and constant mark of distinction. The leaflets are ordinarily an inch and a half in length and about half an inch wide, veiny, and rather rigid. The stipules are extremely variable in size, being sometimes half the size of the leaflets, but often (especially the lowermost) very small: their base is sometimes rounded and sometimes acute. We have not seen the ripe fruit.

7. *L. palustris* (Linn.): mostly glabrous; stems somewhat erect, winged; leaflets 3 pairs, oblong-lanceolate, obtusish, mucronate, rather rigid; stipules very small, lanceolate, semisagittate, acuminate, the deflexed lobe also acumi-

nate; peduncles 3–5-flowered; legumes broadly linear, compressed, acuminate, pubescent. *Hook.*—*Linn. sp. p.* 1034; *Eng. bot. t.* 169; *Michx.! fl.* 2. *p.* 66; *Pursh, fl.* 2. *p.* 471; *Bigel. fl. Bost. p.* 209; *DC. l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 161.

α. glabrous; lateral and inferior segments of the calyx lanceolate (the inferior one narrowest), about the length of the tube; peduncles equalling or exceeding the leaves; leaflets 3–4 pairs, varying from lanceolate to narrowly elliptical.

β. glabrous, rather flaccid; lateral and inferior segments of the calyx linear-subulate, longer than the tube.—L. occidentalis, *Nutt.! mss.*

γ. glabrous; lateral segments of the calyx oblong, obtuse, shorter than the tube.

δ. glabrous; lateral segments of the calyx triangular-subulate, much shorter than the tube; stipules minute, linear-subulate.

ε. minutely pubescent; lateral segments of the calyx triangular-oblong, obtuse, much shorter than the tube; leaflets 4–5 pairs, rigid; stem scarcely winged.

ζ. finely pubescent; lateral and inferior segments of the calyx narrowly triangular-lanceolate, very acute, shorter than the tube; peduncles 3–10-flowered.—L. hydrophilus, *Nutt.! mss.*

η. pubescent; lateral and inferior segments of the calyx linear-lanceolate or linear, very acute, as long as the tube; leaflets elliptical; stipules much larger, oblong.

Swampy places and along streams, Canada! (lat. 55°) to Pennsylvania! west to Oregon. *β.* mouth of the Oregon, *Nuttall!* *δ.* Saskatchawan River, ex *Hook.!* *ε.* California, *Douglas!* *ζ.* Marshes, Massachusetts, *Mr. Oakes!* Western part of New-York! *η.* Dry soil, Quoddy Head, Maine, *Mr. Oakes!* July–Aug.—Flowers rather large, bright purple.

8. *L. vestitus* (Nutt.! mss.): "erect and rigid or a little climbing, silky-canescent; leaflets 5–7-pairs, small, elliptical or oval, cuspidate; tendrils mostly pinnated; stipules broadly semisagittate, acuminate, slightly toothed below, about the size of the leaflets; racemes about the length of the leaves, 4–6-flowered; flowers large, purple; lower segments of the calyx narrowly lanceolate, acuminate, rather longer than the tube; legume flat, pubescent, attenuate at each end; style villous along the inside for about one-third its length.

"Plains of the Oregon towards the sea. June.—A very distinct species, a foot or more high, clothed with an appressed silky pubescence, except the upper surface of the leaves, which is nearly glabrous. Stem erect in open places, decumbent in shady situations. Leaflets half an inch or a little more in length, and 2–3 lines wide. Calyx attenuate at the base." *Nuttall.*

9. *L. strictus* (Nutt. mss.): "pubescent, rather rigid; stem slender, angled; leaflets 2–5 pairs, linear, acute; tendrils bifid; stipules semicordate, acuminate, serrate; peduncle about 4-flowered, longer than the leaf; flowers large; lower segments of the calyx acuminate, as long as or longer than the tube.

"Bushy places around St. Diego, California. April.—A small species, nearly allied to the preceding, of which it may perhaps be only a variety. Leaflets remote, about 1–2 lines wide." *Nuttall.*—This species we have not seen.

10. *L. linearis* (Nutt.! mss.): "nearly glabrous; stem decumbent, slender, angled; leaves nearly sessile; leaflets 5–6 pairs, narrowly linear, mostly obtuse, apiculate, rigid; tendrils short, simple or bifid; stipules small, lanceolate, semisagittate, laciniate-toothed or incised below; peduncles 3–4-flowered, shorter than the leaves; flowers rather large, pale purple; segments of the calyx triangular-subulate, shorter than the tube; legume attenuated at each end; style nearly filiform, villous all round at the summit.

"Plains of the Platte. April.—A low decumbent species. Leaflets an inch or more long, and about half a line wide. Stipules with 2–5 very sharp slender teeth. Flowers pale, the tip of the keel deep purple. [Corolla about ¾ of an inch in length, but very narrow, 4 times longer than the calyx.]—More of a Vicia than a Lathyrus; but in habit, &c. this and the succeeding species are inseparable from the following species." *Nuttall.*

11. *L. dissitifolius* (Nutt. mss.): "somewhat pubescent, climbing; leaflets 4–6 pairs, narrowly linear, rather obtuse, apiculate, scattered, the petiole thick and channelled, terminating in a pinnatifid tendril; stipules linear, semisagittate, entire; peduncles 4–6-flowered, much shorter than the leaves; segments of the calyx short, the uppermost obtuse.

"With the preceding, to which it is nearly allied; but with a long weak scandent stem and smaller entire stipules. Flowers smaller, pale purple. Stigma flattish, villous all round." *Nuttall.*—We have seen no specimen of this plant; but we fear it is not sufficiently distinct from the preceding. In our specimen of L. linearis, the leaflets are more or less scattered (as is very common in the genus), and the stipules occasionally have only one or two teeth.

12. *L. ornatus* (Nutt.! mss.): "erect, glabrous, often glaucous; stem quadrangular; leaflets 3–4 pairs, lanceolate-linear, rather acute, mucronate, rigid and strongly veined, tendril scarcely any; stipules linear-lanceolate and slender, semisagittate, entire; peduncles about 4- [or 6–8-] flowered, much longer than the leaves; flowers very large, purple; segments of the calyx subulate, slightly unequal, rather shorter than the tube; legume smooth and flat, acuminate at each end, about 10-seeded; style minutely pubescent along the upper side."—L. polymorphus, *Torr.! in ann. lyc. New-York*, 2. *p.* 180, excl. syn.

Kamassa prairies, common, *Nuttall!* On the Missouri and Platte, *Dr. James!* May–June.—Scarcely a foot high, sometimes branched. "Root long and black", *Nutt.* Petioles very short, terminated with a small bristle. Leaflets an inch or more in length, 1–2 lines wide. Stipules almost subulate, resembling the leaflets, ¾ of an inch in length. Flowers very showy, an inch long (as large as those of the cultivated Sweet Pea, *Nutt.*), the vexillum and wings broad. Calyx very small. The immature pods, in the specimen of Dr. James, are about 2 inches long, and nearly half an inch wide, reticulated, tapering below into a distinct stipe. The seeds, according to Dr. James, are as large as the Common Pea.—This species and L. polymorphus are (as the genera are characterized) rather species of Orobus than of Lathyrus: they are clearly congeners of O. varius, O. albus, and others of the same section; but on the other hand they can hardly be separated with propriety from L. linearis, *Nutt.*, which has tendrils and more the habit of the present genus. The pubescence of the style in the species of Orobus we have examined is the same as in Lathyrus.

13. *L. polymorphus* (Nutt.): mostly glabrous; stem erect, a little woody at the base, much branched; branches quadrangular; leaflets 2-5 pairs (mostly scattered), elliptical-lanceolate or linear-oblong, somewhat glaucous, rigid and very strongly veined; petioles terminated by a small bristle; stipules lanceolate, subfalcate, minutely semisagittate at the base; peduncles 3–5-flowered, a little longer than the leaves; flowers very large, purple; segments of the calyx lanceolate-subulate, somewhat unequal, nearly as long as the tube; legumes . . . —*Nutt. gen.* 2. *p.* 97; *DC. prodr.* 2. *p.* 371. L. decaphyllus, *Pursh, fl.* 2. *p.* 471, not of *Hook.* Vicia stipulacea, *Pursh! l. c. suppl.* 2. *p.* 739.

Grassy alluvial plains of the Missouri, *Nuttall, Bradbury! Dr. James!* June.—Stems short. Leaves crowded, especially on the lower part of the stem; the lowermost 2–4-foliolate, the upper 6–10-foliolate. Leaflets 1–2½ inches long, variable in width, mostly obtuse at each end, mucronate, strongly longitudinally veined. Stipules very variable in size, very acute, sometimes almost subulate. Flowers about as large as the preceding species. Style narrowly linear, pubescent nearly the whole length of the upper surface. Legume large, glabrous.—Allied to the preceding, but quite distinct.

4. ASTROPHIA. *Nutt. mss.*

Calyx campanulate, 5-cleft; the 2 upper segments a little shorter. Style flat, linear, pubescent along the inside. Legume broadly oblong, compressed, few-seeded.—A perennial herbaceous silky-villous plant. Stem erect, branching. Leaves pinnately 4–6-foliolate; the petiole terminated by an abortive leaflet. Peduncles axillary, few-flowered.

A. littoralis (Nutt.! mss.)

"Sand hills near the estuary of the Oregon.—Roots slender, horizontal. Plant thickly clothed with a soft silky gray pubescence, branching from the base, with numerous infertile axillary branchlets. Stipules more than twice the size of the leaflets, oblong, inequilateral and somewhat produced at the base on one side, but scarcely semihastate. Leaves small. Leaflets 2–3 pairs, linear-spatulate, about half an inch long and 1½ line wide; the terminal leaflet scarcely one-fourth the size of the others (appearing like a slight expansion of the apex of the petiole). On some of the branches the lowest leaves are 3-cleft, instead of pinnate. Racemes pedunculate, about 5-flowered. Perfect flowers not seen. Segments of the calyx lanceolate, acute, about as long as the tube. Ovary 8–10-ovuled. Legume about 1½ inch long and half an inch wide, villous, with 2–3 perfect seeds. Seeds globose, brown, with a linear semicircular hilum.—The plant has somewhat the habit of Orobus, but the pod is flat and broad." *Nuttall.*

TRIBE II. PHASEOLEÆ. *Bronn; Benth.*

Corolla papilionaceous. Stamens diadelphous (9 & 1), or rarely somewhat monadelphous. Disk usually a membranous sheath surrounding the base of the ovary. Legume continuous, never separating into joints, but often torose and with cellular partitions between the seeds, dehiscent. Seeds usually reniform, convex or compressed. Radicle incurved.—Twining (sometimes erect or prostrate) herbaceous or shrubby plants. Leaves usually pinnately trifoliolate (rarely reduced to a single leaflet), sometimes unequally pinnate, stipellate. Inflorescence axillary, seldom terminal, racemose or somewhat panicled.

Subtribe 1. EUPHASEOLEÆ, *Benth.*—Ovary with several ovules. Inflorescence racemose with the pedicels usually aggregated on alternate knobs. Vexillum usually biappendiculate at the base. Style often indurated above the middle. Cotyledons thick, nearly unchanged in germination, and either rising out of the ground or remaining beneath the surface.

1. *Leaves pinnately trifoliolate.*

5. PHASEOLUS. *Linn.; DC. prodr.* 2. *p.* 390; *Benth. Leg. gen. p.* 73.

Calyx campanulate, 5-toothed or 5-cleft; the 2 upper teeth often more or less united. Keel with the stamens and style spirally twisted or circinate.

Legume linear or falcate, more or less compressed, or somewhat terete, many-seeded. Hilum small, oval-oblong, naked, or rarely with a small membranaceous caruncle.—Herbaceous or suffrutescent, twining or trailing plants. Leaflets manifestly stipellate. Pedicels usually in pairs.—*Kidney-Bean.*

§ 1. *Stipules not produced at the base: teeth of the calyx broad, much shorter than the tube: legume compressed, broad and falcate.*—Drepanospron, Benth.

1. ***P. perennis*** (Walt.): perennial; leaflets ovate, acuminate, palmately 3-veined; racemes solitary or somewhat clustered, simple or a little branched, longer than the leaves; legumes pendulous.—*Walt. Car. p.* 182; *Pursh, fl.* 2. *p.* 469; *Darlingt. fl. Cest. p.* 429. P. perennis & macrostachyus, *Ell.! in jour. acad. Philad.* 1. *p.* 384; *DC. prodr.* 2. *p.* 391. P. paniculatus, *Michx.! fl.* 2. *p.* 60. Dolichos polystachyos, *Linn.; Willd. sp.* 3. *p.* 1049.
Rocky woods and borders of swamps, Canada! to Florida! and west to Louisiana! July–Aug.—Stem 4–10 feet long, pubescent, climbing over small shrubs or trailing on the ground. Leaflets 2–4 inches in length, and often as broad as long; the terminal one usually subcordate; the lateral ones inequilateral, pubescent beneath. Stipules small, lanceolate. Racemes 4–12 inches long, slender, loosely flowered: pedicels 2–4 lines long, with 3 minute hairy bracts at the base. Calyx somewhat bilabiate; teeth broad and very short, the upper ones rounded. Corolla purple. Legume 1½–2½ inches long and 4–5 lines wide, somewhat tumid, strongly falcate. Seeds oblong-reniform, dark purple.—Elliott considered the Northern plant as distinct from the Southern one; but we find no constant difference between them.

2. ***P. sinuatus*** (Nutt! mss.): perennial, nearly glabrous, prostrate; leaflets reticulated, 2–3-lobed; the lobes obtuse; peduncles longer than the leaves, mostly solitary, simple; legumes pendulous.
East Florida, *Mr. Ware!* (*Nuttall*) Tampa Bay, *Dr. Burrows!*—Stem 4–6 feet long. Leaflets 1–1½ inch long, somewhat coriaceous, sometimes obtusely triangular, but usually almost equally 3-lobed. Stipules small, lanceolate. Racemes 6–8 inches long; the flowers rather distant and chiefly produced on the upper portion of the peduncle. Flowers and legume as in the preceding species, from which it is at once distinguished by its lobed and much smaller leaves; but it is possibly a mere variety of that plant.

§ 2. *Stipules adnate to the petiole, produced and free at the base: lower tooth of the calyx as long or longer than the tube: legume linear, straight, somewhat terete.*—Strophostyles, Elliott.

3. ***P. diversifolius*** (Pers.): annual; stem usually prostrate; diffuse, retrorsely and roughly hirsute; leaflets broadly ovate, angular or 2–3-lobed, sometimes entire, about the length of the petioles; stipules lanceolate; peduncles longer than the leaves; flowers few, capitate; lower tooth of the calyx narrow, longer than the tube; legume slightly pubescent, broadly linear, nearly terete, 6–7-seeded; seeds oblong-cylindrical, woolly.—*Pers. syn.* 2. *p.* 296; *DC. prodr.* 2. *p.* 394. P. trilobus, *Michx.! fl.* 2. *p.* 60, not of *Roth; Pursh, fl.* 2. *p.* 470; *Bigel. fl. Bost. p.* 268. P. angulosus, *Ort.; DC. l. c.?* Glycine angulosa, *Muhl. in Willd. sp.* 3. *p.* 1056. Strophostyles angulosa, *Ell. sk.* 2. *p.* 229. Dolichos? angulosus, *DC. l. c. p.* 399, excl. syn. *Walt.*
Sandy shores, particularly near the sea, Canada! to Florida! west to Louisiana! Aug.–Oct.—Roots often bearing numerous small tubers. Stem

2–6–8 feet long, rather stout, usually spreading on the ground, but sometimes climbing. Leaflets 1½–2[illegible] inches long, sparsely hirsute beneath, with the lobes commonly distinct and rounded. Peduncles when in flower 2–4 inches long, in fruit 6 inches or more, 6–10-flowered. Calyx with 2 lanceolate lateral bracteoles; upper tooth minutely bifid; the lower one lanceolate-subulate, one-third longer than the tube. Corolla purplish: keel with a very long curved beak, without a horn at the base. Legume about 3½ inches long and ¼ of an inch wide, black when ripe. Seeds twice as long as wide, covered with a gray mealy pubescence: hilum linear.

4. *P. helvolus* (Linn.): perennial; stem slender, retrorsely hirsute; leaflets ovate-oblong, oblong, or oblong-linear, usually entire, about the length of the petiole; stipules lanceolate; peduncles slender, 3–6 times as long as the leaves; flowers few, capitate; lower lip of the calyx lanceolate, scarcely longer than the tube; legume straight, terete, narrowly linear, 10–11-seeded, slightly pubescent; seeds pubescent, reniform.—*Linn. sp.* 1017; *Pursh, fl.* 2. *p.* 470; *Michx.! fl.* 2. *p.* 60; *DC. prodr.* 2. *p.* 395. P. vexillatus, *Linn. l. c.?; Pursh, l. c.; DC. l. c.?; Darlingt. fl. Cest. p.* 430. P. peduncularis, *Bart. fl. Philad.* 2. *p.* 81. Strophostyles peduncularis, *Ell. sk.* 2. *p.* 230. Glycine peduncularis, *Muhl. cat. p.* 67. G. umbellata, *Muhl. in Willd. sp.* 3. *p.* 1058?

α. leaflets mostly ovate-oblong, obtuse at the base, thin, sparingly hirsute beneath, glabrous above, entire, sometimes a little dilated or angular at the base.

β. leaflets elliptical-ovate, acute at the base, entire, sparingly hirsute on both sides.

γ. leaflets linear-oblong, obtuse at the base, entire, somewhat coriaceous, sparingly hirsute on both sides.

δ. leaflets oblong-lanceolate, acute, dilated at the base, entire, strongly hirsute beneath, nearly glabrous above.

ε. leaflets 3-lobed.

α. Sandy fields, New-York! and New Jersey! β. γ. & δ. Virginia! to Florida! west to Kentucky! and Louisiana! ε. Georgia! and Florida! Aug.–Sept.—Stem 3–5 feet long, much more slender than in the preceding species. Leaflets very variable in size and form, but always smaller than in P. diversifolius. Peduncles nearly as slender as the petioles, sometimes 8–10 inches long, 3–5- rarely 7-flowered. Flowers much resembling those of the preceding species. Beak of the keel with a tooth at the base. Legume about 2½ inches long and scarcely 2 lines wide. Seeds clothed with a mealy pubescence: hilum linear-oblong.—We have not seen the fruit of all the forms described above: some of them possibly may not belong to this species. We are unable to find any difference between P. helvolus and P. vexillatus of North American botanists; but the West Indian plant may be a distinct species.

5. *P. leiospermus:* (perennial?) stem slender, retrorsely hirsute; leaflets linear-oblong, rather obtuse, entire, somewhat coriaceous, as long as the petioles, reticulated and hirsute on both surfaces; stipules subulate; peduncles slender, much longer than the leaves; heads few-flowered; teeth of the calyx lanceolate, as long as the tube; legume broadly linear, compressed, very hirsute, about 5-seeded; seeds oval, glabrous.

Red River, Louisiana, *Dr. Hale!* Arkansas, *Dr. Leavenworth!*—Stem twining. Leaflets 1½ inch long, and 3–5 lines wide, somewhat dilated at the base, hirsute, with short rigid hairs. Peduncles usually 2–3 times as long as the leaves. Flowers smaller than in the two preceding species, but resembling them in structure. Legume scarcely more than an inch long, and 2½ lines wide, with a very short abrupt acumination. Seeds 1½ line long, purple, polished.

6. VIGNA. *Savi; Benth. comm. Leg. gen. p.* 49.

Calyx somewhat bilabiate; upper lip entire. Vexillum with 2 callosities near the base of the limb. Keel not spirally twisted. Stigma lateral. Legume terete.—Twining herbs.

1. *V. glabra?* (Savi): glabrous [pubescent, *Ell.*]; upper lip of the calyx obtuse. *DC. prodr.* 2. *p.* 401. Dolichos luteolus, *Jacq. hort. Vind.* 1. *p.* 39, *t.* 90?; *Pursh, fl.* 2. *p.* 470; *Nutt.! gen.* 2. *p.* 112; *Ell. sk.* 2. *p.* 231.
Borders of rice-fields, Georgia, *Pursh, Elliott.*— ① Stem running over small shrubs. Leaflets ovate, tapering to a very acute point, very slightly acuminate: petioles 1–2 inches long. Peduncles 2–4 inches long, with 3–5 flowers at the summit. Lower tooth of the calyx longer than the others. Corolla pale yellow. Keel rather longer than the vexillum. Legume somewhat compressed, a little hairy. *Ell.*—We have only seen the flowers of this plant. They are nearly as large as those of the common Pea. Vexillum very broad. Mr. Nuttall thinks it is distinct from the West Indian species.

7. DOLICHOS. *Linn.; Benth. comm. Leg. gen. p.* 49.

Calyx with 2 bracteoles at the base, campanulate, more or less bilabiate; the upper lip 2-cleft or 2-toothed, rarely entire; lower lip 3-cleft or 3-toothed. Vexillum furnished near the base of the limb with 2–4 callosities: keel more or less falcate. Style not compressed: stigma terminal. Legume compressed. Seeds oval, more or less compressed; hilum small, oval.—Herbaceous or suffrutescent usually twining plants. Pedicels 1–2 together.

1. *D. multiflorus:* perennial; stem twining, pubescent; leaves orbicular, with a very short acumination, when young velvety-pubescent, in the adult state almost glabrous; racemes axillary, densely spiked, many-flowered, about as long as the petioles; upper lip of the calyx entire; lateral teeth short and obtuse; lowest one longest, lanceolate; vexillum obovate, with minute linear callosities; keel scarcely falcate; legume broad, straight, much compressed, obtuse, 4–5-seeded.
Alluvial banks of the Oconee River, Georgia, *Dr. Boykin!* Arkansas, *Dr. Leavenworth!* June–July.—Stem 5–10 feet long, retrorsely pubescent. Leaflets longer than the petioles, 2–3 (and sometimes 5–6) inches in diameter, often wider than long. Stipules minute, lanceolate. Racemes pedunculate, elongated, 20–30-flowered, many of the flowers abortive: pedicels fasciculate, about one line in length. Vexillum and wings purple and striated internally. Keel nearly white. Legume 2–2½ inches long, and half an inch wide, nearly glabrous when mature, rounded at the summit, with a short incurved point. Seeds separated by cellular partitions, oval, purplish brown, compressed.

8.? ERYTHRINA. *Linn.; Lam. ill. t.* 608; *W. & Arn. prodr. Ind. Or.* 1. *p.* 260.

Calyx tubular or tubular-campanulate, truncate, or bilabiate, or spathaceous. Corolla with a very long lanceolate or obovate vexillum, without callosities at the base, much larger than the very small wings and keel. Stamens straight, nearly as long as the vexillum, diadelphous or more or less monadelphous. Style straight, glabrous. Legume (indehiscent?) stipitate, elongated, torulose, several-seeded, compressed between the seeds, which are rather distant, pointed with the indurated subulate style.—Trees or shrubs, rarely herbaceous plants; the stem and petioles often prickly. Leaves pinnately trifoliolate. Stipules small, free from the petiole: partial stipules gland-like. Racemes elongated: pedicels usually two or three together.

Mr. Bentham, who suspects the legume of Erythrina to be indehiscent, inclines to separate it, with Mucuna and Butea, as a subtribe. We have not examined the mature fruit.

1. *E. herbacea* (Linn.): branches herbaceous, somewhat prickly, rising from a very thick subterranean trunk or cormus; leaflets broadly rhomboidal and somewhat hastately 3-lobed, mostly glabrous; racemes terminal; calyx truncate, obscurely toothed or nearly entire; vexillum lanceolate, 4 or 5 times longer than the calyx; keel-petals (distinct) and wings scarcely exserted; stamens monadelphous with the sheath entire at the base, thence diadelphous.—*Walt. Car. p.* 180; *Willd. sp.* 3. *p.* 912; *Bot. mag. t.* 887; *Michx.! fl.* 2. *p.* 61; *Nutt. gen.* 2. *p.* 92; *Ell. sk.* 2. *p.* 190; *DC. prodr.* 2. *p.* 411. Corallodendron, &c., *Trew. ehret. t.* 58; *Catesb. Car. t.* 49.

In rich light soil, S. Carolina and Georgia! to Florida! and Louisiana. March–May.—Cormus irregular, often branched, frequently rising a little above the surface of the ground, "yellow and esculent," *Dr. Boykin.* Stems 2–4 feet high, with a short hooked prickle at the base of the petioles, which are also a little prickly. Racemes very long and spicate: the flowers deep scarlet, 2 inches long. Seeds about the size of the common bean, bright scarlet.

E. Corallodendron stands in Muhlenberg's Catalogue as a doubtful native of Florida. No other writer has noticed it as a native of the United States.

2. *Leaves pinnately* 5–15-*foliolate, exstipellate.*

9. APIOS. *Boerh.; Mœnch, meth. p.* 165; *Nutt. gen.* 2. *p.* 113.

Calyx campanulate, obscurely bilabiate; the upper lip of 2 very short rounded teeth; the lower lip with the lateral teeth nearly obsolete, the inferior one lanceolate-subulate and longer. Vexillum very broad, with a longitudinal fold in the centre, reflexed: keel long, falcate, and with the stamens and style at length spirally twisted. Stigma emarginate. Legume rather terete, slightly falcate, many-seeded.—A perennial twining nearly glabrous herb. Root bearing numerous edible tubers. Leaves 5–7-foliolate, minutely stipulate. Racemes axillary, sometimes compound: pedicels short, 3 or 4 together on approximated knobs. Calyx with 2 minute caducous bracteoles at the base. Flowers brownish-purple.

A. tuberosa (Mœnch, l. c.)—*Pursh, fl.* 2. *p.* 273; *Nutt. l. c.; Ell. sk.* 2. *p.* 235; *DC. prodr.* 2. *p.* 390. Glycine Apios, *Linn.; Bot. mag. t.* 1198; *Michx.! fl.* 2. *p.* 83; *Hook.! fl. Bor.-Am.* 1. *p.* 161; *Darlingt. fl. Cest. p.* 428.

α. nearly glabrous; leaflets ovate-lanceolate.

β. pubescent; leaflets lanceolate, acuminate.— A. pubescens, *Nutt. mss.*

Moist shady places, Canada! to Florida! west to Missouri! β. Woods of the Rocky Mountains, *Nuttall.* July.—Stem slender, scabrous. Racemes dense, shorter than the leaves. Flowers odorous.

10. WISTARIA. *Nutt. gen.* 2. *p.* 115; *DC. prodr.* 2. *p.* 389.

Thyrsanthus, *Elliott.*

Calyx campanulate, somewhat bilabiate; upper lip of 2 short teeth; lower of 3 triangular-lanceolate teeth. Vexillum with 2 callosities decurrent along the claw: keel and wings falcate. Legume nearly terete, torulose, stipitate many-seeded. Seeds reniform.—Twining shrubby plants. Stipules minute. Racemes large, axillary and terminal, with large colored deciduous bracts. Flowers lilac-colored, becoming resupinate by the twisting of the pedicels after flowering.

1. *W. frutescens* (DC.): younger shoots pubescent, at length glabrous; wings with 2 auricles; ovary glabrous; leaflets ovate-lanceolate, acute. —*DC. prodr.* 2. *p.* 390. W. speciosa, *Nutt. l. c.* Glycine frutescens, *Linn.; Michx.! fl.* 2. *p.* 63; *Sims. bot. mag. t.* 2103. Apios frutescens, *Pursh, fl.* 2. *p.* 474. Thyrsanthus frutescens, *Ell. sk.* 2. *p.* 237.

β. macrostachya: leaflets elliptical-lanceolate; raceme very long and flowers large; calyx lanuginous, glandular.—W. macrostachya, *Nutt. mss.*

Damp rich alluvial soils, Virginia! to Florida! Illinois, *Michaux! β.* Louisiana, *M. Teinturier* fide *Nuttall.* April.-May.—Stem long, climbing over bushes and small trees. Leaves 6–8 inches long; leaflets 4–6 pairs, 1–2 inches long, slightly pubescent. Racemes oblong, 3–6 inches long (often 9 inches in *β.*) and about two inches in diameter, before the expansion of the flowers appearing like aments, from the conspicuous bracts. Pedicels 3–4 lines long. Calyx pubescent, often purplish; upper lip very obtuse and obscurely 2-toothed: teeth of the lower lip much shorter than the tube. Vexillum nearly orbicular; callosities broad and free at the apex. Wings as long as the keel; the auricle on the upper side subulate, almost as long as the claw; inferior one very short. Keel-petals cohering at the summit, each furnished with a long subulate tooth at the base of the limb.—A highly ornamental plant, now common in gardens.

Subtribe 2. RHYNCHOSIEÆ, *Benth.*—Ovary 1-2-ovuled. Inflorescence axillary: flowers solitary or racemose, with the pedicels seldom aggregated. Vexillum usually biappendiculate at the base. Upper portion of the style usually indurated.

11. RHYNCHOSIA.* (*Lour.*?) *DC.* (partly); *W. & Arn. prodr. Ind. Or.* 1. *p.* 238.

Arcyphyllum, *Ell.*—Glycine, *Nutt.; H. B. & K.*

Calyx ebracteolate, somewhat bilabiate, with the lower lip 3-parted, and the upper bifid and about equal to the lower; or deeply and almost equally 4-parted (rarely 5-parted) nearly to the base, the upper segment 2-cleft. Corolla deciduous: vexillum without callosities: keel falcate. Style glabrous.

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* From a remark in Mr. Bentham's late memoir, *De Leguminosarum generibus, p.* 49, we perceive that E. Meyer considers the original Rhynchosia of Loureiro to be different from the Rhynchosia of De Candolle; and he has therefore applied the name of *Copisma* to the latter. But if this view be correct, the name *Arcyphyllum* of Elliott has the priority.

Legume obliquely ovate or oblong, often falcate, compressed, 1–2-seeded. Seeds commonly more or less carunculate.—Usually twining or trailing perennial herbs, or rarely shrubby plants. Leaves pinnately trifoliolate, sometimes reduced to a single leaflet, commonly sprinkled (especially beneath) with resinous atoms. Flowers yellow, racemose, sometimes solitary.

§ 1. *Calyx (marcescent) somewhat bilabiate, deeply 4-cleft; segments subulate, the lowest one longest: hilum and caruncalus small: stem twining.*—EURHYNCOSIA, Arn.

1. *R. Caribæa* (DC.): slightly pubescent; stipules setaceous; leaflets roundish-rhombic, rather acute, membranaceous. nearly glabrous above, dotted with resinous glands beneath; racemes filiform, rather longer than the leaves, 7–15-flowered; flowers (minute) reflexed, remote; legumes scimitar-shaped, narrowed at the base, reflexed.—*DC. prodr.* 2. *p.* 384. R. minima, *DC. l. c.* (according to *Nutt.*) Glycine Caribæa, "*Jacq. ic. rar. t.* 146"; *Kunth, syn.* 4. *p.* 95. G. reflexa, *Nutt. gen.* 2. *p.* 115; *Ell. sk.* 2. *p.* 236.

Damp alluvial soils, S. Carolina to Florida, and west to Louisiana! and Texas!—Stem long and slender, climbing over shrubs. Leaflets longer than the petiole; the terminal one very broadly and obtusely rhomboidal, about 2 inches wide; the lateral ones dilated and roundish on the outside. Racemes 3–5 inches long. Calyx about half the length of the expanded corolla: upper lip cleft half-way down, the sinus obtuse: middle segment of the lower lip longest. Vexillum obovate, without gibbous projections. Legume ¾ of an inch long, 2½ lines wide.—The Texan plant has smaller leaves and smaller and less falcate legumes than our specimens from Louisiana.

§ 2. *Calyx 4-parted nearly to the base, persistent and foliaceous; segments linear or oblong-lanceolate, acuminate, nearly equal, about the length of the corolla: legume much longer than the calyx: hilum and caruncalus small: stem erect, or commonly twining or trailing.*—ARCYPHYLLUM, Ell.

2. *R. menispermoidea* (DC.): stem twining or prostrate, retrorsely pubescent; stipules ovate; leaflet solitary, reniform, canescent beneath; peduncles very short, 1–3-flowered; segments of the calyx lanceolate. *DC. in ann. sci. nat.* 4. *p.* 102, *& mem. Leg. t.* 55, *& prodr.* 2. *p.* 384.

Texas, *Drummond!*—Stem 2–3 feet long, slender, branching from the base. Leaflets 1–1½ inch in diameter, pubescent on both surfaces. Racemes usually shorter than the petioles. Calyx with the upper lip cleft one-third of the way down. Vexillum obovate, with a very slight callosity near the base of the limb. "Legume oval-lanceolate, acute, 1–2-seeded scarcely pubescent." *DC.*—This well-marked species was described by De Candolle from specimens sent from Acapulco, Mexico.

3. *R. tomentosa:* stem angular; stipules linear-lanceolate; leaves trifoliolate, or sometimes reduced to a single leaflet; leaflets roundish or ovate; racemes spicate; legumes oblong, somewhat falcate.—Glycine tomentosa, *Linn.*; *Willd. sp.* 3. *p.* 1061; *Michx.! fl.* 2. *p.* 63.

α. *monophylla:* pubescent; stem erect, dwarfish (3–6 inches high); leaflet mostly solitary, orbicular or reniform, rugosely veined; racemes axillary or aggregated at the summit of the stem.—R. reniformis, *DC. prodr.* 2. *p.* 384. Trifolium simplicifolium, *Walt. Car. p.* 184. Glycine tomentosa α.

monophylla, *Michx.! l. c.* G. reniformis, *Pursh, fl.* 2. *p.* 86. G. monophylla, *Nutt. gen.* 2. *p.* 115, not of *Linn.* G. simplicifolia, *Ell. sk.* 2. *p.* 234. Arcyphyllum simplicifolium, *Ell. in jour. acad. Philad.* 1. *p.* 371.

β. *intermedia:* pubescent; stem erect; leaves all trifoliolate; leaflets strongly rugose, middle one roundish, lateral ones ovate.

γ. *volubilis:* pubescent; stem twining (2–4 feet long); upper leaves trifoliolate; lowest ones unifoliolate; leaflets roundish or broadly ovate, sometimes rather acute, rugosely veined; racemes few-flowered, shorter than the leaves.—R. difformis, *DC. l. c.* Glycine tomentosa β. volubilis, *Michx.! l. c.* G. tomentosa, *Pursh, l. c.* (excl. β.); *Nutt. l. c.; Ell. sk. l. c.*

δ. *erecta:* velvety-pubescent; stem erect (1–2 feet high); leaves trifoliolate; leaflets oval or oblong, nearly acute, slightly rugose; racemes usually shorter but often longer than the petioles.—R. erecta, *DC. l. c.* Trifolium erectum, *Walt. Car. p.* 114. Glycine erecta, *Nutt. l. c.; Ell. sk. l. c.* G. tomentosa α. erecta, *Michx.! l. c.; Pursh! l. c.*

ε.? *mollissima:* velvety-pubescent; (stem erect?) leaves trifoliolate; leaflets oval; racemes elongated (5–7 inches long), many-flowered, terminal. *Ell.* —Glycine mollissima, *Ell. l. c.*

Dry sandy soils. α. South Carolina! to Florida! and Alabama! β. Tampa Bay, Florida, *Dr. Burrows!* γ. North Carolina! to Georgia. δ. Maryland! to Florida! and Louisiana! ε. St. Mary's, Florida, *Baldwin.*—Leaflets, particularly on the lower surface, and the calyx, sprinkled with minute yellowish resinous dots, which are very distinct in the more glabrous varieties, but are concealed by the pubescence in δ. and probably also in ε. Calyx two-thirds the length of the corolla; segments lanceolate, strongly veined; upper segment deeply 2-cleft. Vexillum orbicular or broadly obovate, generally (particularly in γ. and δ.) with 2 very minute gibbous projections near the base of the limb. Wings a little longer than the keel. Legume about ¾ of an inch long and 3 lines wide. Seeds mottled.—From a careful examination of an extensive series of specimens, we are persuaded that all the varieties described above are merely forms of one species, as indeed they were regarded by Michaux. The var. monophylla sometimes bears trifoliolate leaves, and late in the season produces long axillary branches, which are sometimes twining. The racemes are extremely variable in length; but we have never seen them so long as they are said to occur in the var. mollissima.

4. *R. latifolia* (Nutt.! mss.): softly hirsute; stem angular, twining, stipules subulate-lanceolate; leaves trifoliolate; leaflets somewhat rhomboidal, dilated, usually obtuse; racemes longer than the leaves, many-flowered; flowers rather distant, on very short pedicels; segments of the calyx at length oblong-lanceolate, acuminate; vexillum obovate; legume oval-oblong.

β.? more glabrous; leaflets smaller, orbicular-obovate, with a short abrupt acumination, and conspicuously mucronate; racemes about as long as the leaves; vexillum orbicular, with minute gibbous projections on the inside.

Forests of Arkansas, *Nuttall! Dr. Leavenworth!* Red River, Louisiana, *Dr. Hale!*—Stem 3–4 feet long, clothed with a soft pubescence. Leaflets 1½ inch (in β. scarcely 1 inch) in diameter, canescent, minutely dotted beneath; the terminal one nearly orbicular; the lateral ones more or less rhomboidal-ovate. Raceme 4–8 inches long, 10–14-flowered; the flowers scattered, nearly half an inch long. Corolla bright yellow. Legume three-fourths of an inch long, and one-third of an inch wide.—Scarcely distinct from an unnamed West Indian species in our herbarium.

12. PITCHERIA. *Nutt. in jour. acad. Philad.* 7. *p.* 93.

Calyx (marcescent) shorter than the corolla, deeply and about equally 4-cleft, or very slightly bilabiate; segments subulate, the inferior one a little longest; the upper one bifid at the apex. Corolla deciduous: vexillum (glabrous) obovate or nearly orbicular, without callosities, the margins of the short spurs and of the claw folded in: wings smaller than the keel-petals, narrowly oblong, somewhat falcate, with a subulate tooth at the base nearly the length of claw: the keel conspicuous, rounded, a little falcate, rather shorter than the vexillum. Stamens diadelphous; the free filament articulated at the base. Ovary semi-oval, compressed, hairy, 2-ovuled: style filiform, the lower portion hairy, the upper half indurated: stigma small, subcapitate, glabrous. Legume oblong, tapering at the base, sessile, several times longer than the calyx, compressed, 1–2-seeded. Seeds roundish, somewhat carunculate.—Erect and rigid perennial herbs, with numerous slender and simple branches. Leaves small, pinnately trifoliolate, on very short petioles: leaflets elliptical or oval, the lower surface copiously dotted with resinous atoms. Stipules minute, setaceous, deciduous. Flowers solitary or nearly so in the axils of the upper leaves, rather large, "yellow, the vexillum marked with numerous red lines" (*Chapman, in litt.*), on short pedicels.

The genus Pitcheria is very nearly allied to Rhynchosia, rather than to Galactia, as will be seen from the detailed character given above. Indeed, supposing that genus to comprise the subgenera indicated by Arnott, we find it nearly impossible to distinguish Pitcheria by any absolute character. Our plant should also be compared with several species of De Candolle's section (or genus) Eriosema, from Mexico and Central America, with which it appears to agree in habit, &c. The genus is dedicated to Dr. Z. Pitcher, late of the United States Army, whose name so frequently appears as a contributor on the pages of this work.

P. galactoides (Nutt. l. c.)

α. petioles shorter than the lateral leaflets; peduncles 1–3-flowered.

β.? *parvifolia:* leaves much smaller, subsessile; peduncles 1-flowered.

In dry soil, Alabama, *Dr. Gates!* Middle Florida, *Dr. Chapman!* May.—Stem about 3 feet high, virgately branched; the branches angled, and (as well as the calyx and veins of the leaves) minutely pubescent. Leaves very numerous, sprinkled beneath with rather conspicuous yellow dots: petioles 4–5 lines long: leaflets ½–¾ of an inch in length (in β. smaller), usually rather obovate-oval, glabrous and somewhat reticulately veined above; the terminal one a little distant from the others; the lateral ones smaller, almost sessile. Flowers solitary or in pairs, on pedicels rather shorter than the calyx, rising from the axils of the leaves, or in a short 2–3-flowered raceme. Flowers 5–6 lines long: vexillum partly folded round the other petals: keel-petals slightly connected, very broad. Mature legumes nearly an inch long, and ¼ of an inch wide, pointed with the base of the style, straight Seeds mottled.—The specimens of our var. β., which perhaps belong to a distinct species, were sent from Alabama by Dr. Gates, and are not very complete. The leaflets (of the rameal leaves) are only 3 or 4 lines long, and the petioles being short in proportion, the leaves appear to be nearly sessile.—The flowers are stated by Nuttall to be red, and they appear reddish in dried specimens.

Subtribe 3. GLYCINEÆ, *Benth.*—Ovary with several ovules. Inflorescence racemose, with the pedicels often more or less aggregated on small alternate knobs. Bracteoles very small, often deciduous. Vexillum usually biappendiculate. Style not indurated. Cotyledons flat, foliaceous in germination.—Flowers small.

13. GALACTIA. *P. Browne; Michx. fl.* 2. *p.* 61; *Benth. Leg. gen. p.* 62.

Calyx 4-cleft; segments acute, of nearly equal length, the upper one broadest. Vexillum incumbent, without callosities, broad: keel petals slightly cohering at the apex. Legume compressed, linear, many-seeded.—Twining or prostrate herbaceous (as are all the N. American species) or somewhat shrubby plants. Leaves pinnately trifoliolate (in G.? Elliottii, pinnate), rarely reduced to a single leaflet. Racemes axillary, usually loosely-flowered.

1. *G. glabella* (Michx.): stem prostrate, somewhat twining, nearly glabrous; leaflets elliptical-oblong or ovate-oblong, obtuse, emarginate, glabrous above, slightly hirsute beneath; racemes a little longer than the leaves; flowers approximated, distinctly pedicellate; calyx nearly glabrous; legumes somewhat hirsute.—*Michx.! fl.* 2. *p.* 62; *Nutt. gen.* 2. *p.* 117; *Ell. sk.* 2. *p.* 239; *DC. prodr.* 2. *p.* 238.
β. leaflets ovate, rather acute.
Sterile sandy soils, New-Jersey! to Florida! β. Florida, *Dr. Chapman!* Aug.–Sept.—Stem 2–4 feet long, spreading on the ground, or sometimes twining around other plants. Leaflets variable in size and form, usually about an inch long and half an inch broad. Racemes at first rather shorter, but at length somewhat longer than the leaves. Pedicels 2 lines long. Segments of the calyx acuminate. Corolla reddish-purple. Anthers linear-oblong. Legume slightly falcate, 4–6-seeded.—The New-Jersey plant is regarded by Nuttall as a distinct species from Elliott's.

2. *G. pilosa* (Nutt.): stem twining, minutely and retrorsely hirsute; leaflets oblong-ovate, finely hirsute on both surfaces, paler beneath; racemes much longer than the leaves; flowers on short pedicels, scattered and remote; legume villous.—*Nutt. gen.* 2. *p.* 116 ?; *Ell. sk.* 2. *p.* 238; *DC. prodr.* 2. *p.* 237.
β. *Macræi:* plant very slender and more glabrous; peduncles 4–6 times longer than the leaves; flowers distinctly pedicellate.—G. Macræi, *Curtis! in Bost. jour. nat. hist.* 1. *p.* 120, excl. syn. *Nutt.*
γ. *angustifolia:* plant very slender; stem pubescent; leaflets linear-oblong; peduncles 3–4 times longer than the leaves; flowers distinctly pedicellate.
Dry sandy soils, North Carolina! to Florida! west to Louisiana! and Arkansas! β. N. Carolina, *Curtis!* δ. Middle Florida, *Croom!* East Florida, *Lieut. Alden!*—Leaflets larger and more acute than in G. glabella; the racemes much more slender, and the flowers smaller and scattered along the peduncle. Anthers linear-oblong.

3. *G. mollis* (Michx.): stem prostrate or twining, retrorsely and softly pubescent; leaflets oval, obtuse, canescently villous and paler beneath; racemes much longer than the leaves; fascicles of flowers approximated toward the summit of the peduncle; pedicels very short; calyx and legumes very villous.—*Michx.! fl.* 2. *p.* 61; *Nutt. gen.* 2. *p.* 117 ?; *Ell. sk.* 2. *p.* 238; *DC. prodr.* 2. *p.* 237.
Dry soils, Maryland! to Florida! August.—Leaflets conspicuously veined, about an inch long. Peduncles about twice as long as the leaves. Calyx half as long as the reddish-purple corolla. Anthers oval. Legume straight.—Differs from the preceding species in being more pubescent, the fascicles of flowers more approximated, and in the shorter pedicels. The flowers are scarcely more than half as large as in G. glabella.—Mr. Nuttall refers G. pilosa of Elliott to this species; and G. mollis of Michaux he is inclined to regard as a distinct plant from his own of that name, which he proposes to call G. pallida. G. mollis, *Pursh*, probably includes two species.

4. *G. Floridana:* prostrate; whole plant tomentose with a whitish pubescence; leaflets oval, very obtuse; racemes a little longer than the leaves; fascicles of flowers approximated; pedicels half the length of the calyx; legume villous.

Sandy places about Tampa Bay, Florida, *Dr. Burrows!*—Stem shorter than in any of the preceding species. Leaflets 1½ inch long, obtuse at each end, strongly veiny. Calyx less than half the length of the corolla. Petals pale reddish-purple. Anthers oblong-linear.—Remarkable for the copious soft whitish pubescence, and also for the size of the flowers, which are larger than those of G. glabella.

5. *G. canescens* (Benth.): creeping, somewhat twining. canescent; leaflets broadly ovate, retuse, slightly hirsute above, silky-pubescent beneath; peduncles fasciculate, elongated, interruptedly few-flowered; calyx silky-villous. *Benth.! comm. Leg. gen. p.* 62.

Texas, *Drummond!*—Leaflets 1½ inch long, and more than an inch wide. Peduncles slender, some of them abortive and changed into roots. Flowers small, 2–3 together, often abortive, as is very frequently the case in this genus.

6. *G. spiciformis:* stem nearly glabrous; leaflets ovate-oblong; coriaceous, rather acute, indistinctly veined, glabrous above, minutely hirsute beneath; racemes (or spikes) much longer than the leaves; flowers approximated and nearly sessile; legume slightly falcate, pubescent.

Key West, Florida, *Rev. Alva Bennett!*—Leaflets about 1¼ inch long, and 7–8 lines wide, finely reticulated above; the veins on the lower surface much less distinct than in any of the preceding species. Peduncles 3–4 times as long as the leaves, in pairs or solitary. Bracteoles lanceolate. Calyx nearly glabrous; segments lanceolate, the lowest one acuminate. Corolla purplish-red. Vexillum broadly obovate: wings shorter than the keel. Anthers linear-oblong. Legume 1½ inch long, 5–6-seeded.

7. *G. brachypoda:* nearly glabrous; stem not twining; leaflets oblong or linear-oblong, somewhat coriaceous, reticulated, paler beneath, obtuse or emarginate; petioles longer than the leaflets; racemes shorter than the petioles, few- (4–6-) flowered; calyx villous.

Dry pine barrens, Middle Florida, *Dr. Chapman!*—Stem about 2 feet long, flexuous. Leaflets about 15 lines long, and 3–6 lines wide; the terminal one with a partial petiole about one-fourth of an inch long: common petiole 1½ inch or more in length. Flowers purplish, half as large as in G. glabella. Segments of the calyx lanceolate, half as long as the corolla.

8. *G. sessiliflora:* glabrous; stem erect, flexuous; leaflets shorter than the petiole, oblong-linear, or linear, somewhat coriaceous, glaucous beneath, the terminal one subsessile; racemes very short, sessile.

Middle Florida, *Dr. Chapman!* Alabama, *Dr. Gates!*—Stems sometimes several from one root, about a foot high. Petioles 1–2 inches long. Leaflets 1–1½ inch long, usually about 3–4 lines wide, but sometimes much narrower. Racemes, or fascicles, 3–5-flowered: pedicels very short. Calyx brownish, hairy; segments lanceolate, acute. Petals purplish. Vexillum nearly orbicular, longer than the other petals. Anthers oblong. Legume falcate, villous, about an inch long, 4–5-seeded.—A very distinct species, but allied to G. brachystachys, *Benth.*, of Mexico.

9. *G. marginalis* (Benth.): suffruticose; branches prostrate, somewhat silky-pubescent, at length glabrous; leaves 1-foliolate; leaflet oblong-lanceolate or linear, narrowed at the base, coriaceous, glabrous, with a marginal nerve beneath; peduncles very short, axillary, 1–3 flowered; calyx pubescent; segments as long as the tube. *Benth. comm. Leg. gen. p.* 62.

Texas, *Drummond!*—Branches somewhat ligneous, slender. Leaflets 2–3 inches long. Flowers red, about as large as in G. glabella. Keel falcate, larger than the wings. Legume villous, 1–1½ inch long. *Benth.*

§ *Upper lip of the calyx ovate, subulate-mucronate: style short and rather thick: legume oblong-linear: leaves unequally pinnate.*

9. *G.? Elliottii* (Nutt.): leaflets 3–4 pairs, elliptical-oblong, nearly glabrous and lucid above, pubescent beneath; racemes longer than the leaves, interrupted, few-flowered.—*Nutt. gen.* 2. *p.* 117; *Ell. sk.* 2. *p.* 240; *DC. prodr.* 2. *p.* 239. G. pinnata, *Muhl. cat. p.* 67, not of *Pers.*
South Carolina, *Elliott.* Georgia, *Le Conte! Miss E. C. Clay!* Near St. John's, Florida, *Mr. Doubleday!* Pensacola, *Mr. F. Cozzens!* May–July.—Stem long and twining, slightly pubescent. Leaves 4–6 inches long: leaflets 1–1½ inch long, mostly retuse, finely reticulated. Stipules minute, subulate. Racemes usually much longer than the leaves; the flowers 3–4 in a fascicle, rather larger than in G. glabella. Calyx hirsute; upper segment lanceolate, acuminate, about one-third longer than the lateral ones. Corolla white tinged with red: vexillum orbicular, with scarcely any claw. Wings and keel-petals equal, oblong; the former with a subulate tooth at the base of the limb. Legume about 2 inches long, and 4–5 lines wide, villous. "Seeds 3–5, reniform, glabrous and speckled." *Ell.*

Subtribe 4. CLITORIEÆ, *Benth.*—Ovary with several ovules. Inflorescence axillary: peduncles 1–2-flowered at the summit, or many-flowered, with the racemes often somewhat cymose-fasciculate or branching. Bracts (except in Amphicarpæa) and bracteoles opposite, striate, either one or the other often large (rarely small or wanting). Vexillum large, not appendiculate at the base.—Flowers commonly large.

11. CLITORIA. *Linn.* (in part); *Gærtn. fr. t.* 149; *Benth. comm. Leg. gen. p.* 50.

Calyx tubular, 5-cleft at the summit; the upper and lateral segments triangular-ovate, acuminate (the upper pair usually united a little higher than the others), the inferior segment narrower. Vexillum large, somewhat orbicular, emarginate or bifid, not spurred on the back: keel small, shorter than the wings, incurved, acute, on very long claws. Stamens monadelphous below the middle, the tenth filament usually free upwards. Style longitudinally bearded or hairy, more or less dilated at the apex. Legume stipitate, linear or linear-oblong, flattish, torulose, pointed with the base of the style, thickened along the sutures; the valves nerveless and wingless.—Mostly twining perennial herbs. Leaves pinnately 3- (rarely 5–7-) foliolate. Stipules somewhat persistent, sometimes striate: partial stipules setaceous. Peduncles 1–2- (or many-) flowered. Bracts similar to the stipules: bracteoles larger. Flowers very large.

The somewhat cyme-like inflorescence in Clitoria and the allied genera is very frequently reduced to 2 flowers rising from the apex of the peduncle: if the exterior one be suppressed, as is sometimes the case, the solitary flower of course is *resupinate*, or stands with the keel (instead of the vexillum) looking towards the stem.

1. *C. Mariana* (Linn.): glabrous; stem somewhat twining or trailing; leaves 3-foliolate, ovate-oblong or ovate-lanceolate; peduncles short, 1–3-flowered; bracteoles lanceolate-subulate, much shorter than the calyx, similar to and scarcely larger than the bracts; legumes linear-oblong, about 4-seeded, torulose, glabrous.—*Walt. Car.* p. 186; *Willd. sp.* 3. *p.* 1070; *Michx.! fl.* 2. *p.* 62; *Nutt.! gen.* 2. *p.* 18; *Ell. sk.* 2. *p.* 240; *DC. prodr.* 2. *p.* 234.
Dry soils, particularly along rivers, New-Jersey! to Florida and Alabama! July–Aug.—Stem 2 feet or more in length. Leaflets variable in breadth, sometimes subcordate at the base. Bracteoles scarcely one-fourth the length of the calyx. Corolla 2 inches or a little more in length, pale blue. Stipe of the mature fruit about the length of the peduncle. Legume 1½ inch in length.

12. CENTROSEMA. *DC.* (sub Clitoria); *Benth. comm. Leg. gen. p.* 53.

Calyx short, broadly campanulate, 5-cleft, or 4-cleft by the union of the two upper segments; the lower segment longest. Vexillum large, broadly orbicular, with a short obtuse spur behind: keel semi-orbicular, scarcely shorter than the wings, incurved, obtuse, on very short claws. Stamens monadelphous or partly diadelphous. Style glabrous, dilated at the apex: stigma barbulate. Legume nearly sessile, linear, compressed, subulate with the style, somewhat thickened along the sutures; the valves marked on each side with a longitudinal nerve next the margin.—Twining herbs or shrubby plants. Leaves pinnately 3- (rarely 5-) foliolate. Stipules often persistent, acuminate or subulate, striate: partial stipules setaceous. Peduncles 1–2–few-flowered. Lowermost bracts similar to the stipules; the upper usually orbicular and clasping: bracteoles larger than and appressed to the calyx. Flowers very large; the vexillum pubescent or villous on the outside.

1. *C. Virginiana* (Benth. l. c.): glabrous or somewhat pubescent; stem very slender, angled, twining; leaves trifoliolate; leaflets varying from oblong-ovate to linear, reticulately veined; peduncles rather shorter than the leaves, 1–4-flowered; segments of the calyx linear-subulate, much longer than the tube, somewhat exceeding the ovate acuminate bracteoles, the 2 upper united at the base; legumes narrowly linear, very long.—Clitoria Virginiana, *Linn.; Walt. Car. p.* 186; *Willd. sp.* 3. *p.* 1069; *Michx.! fl.* 2. *p.* 62; *Ell. sk.* 2. *p.* 240; *DC. l. c.* C. trifolius, flore minore &c., *Dill. hort. Elth. t.* 76. C. calcarigera, *Salisb. parad. Lond. t.* 51.
Dry soils, Virginia! to Florida! and Louisiana! July–Aug.—Leaflets thin but rather firm in texture, scabrous-pubescent with minute uncinate hairs, or glabrous, variable in breadth. Bracteoles and calyx pubescent with minute uncinate hairs. Flowers scarcely half the size of those of Clitoria Mariana: corolla violet, pubescent externally. Legume nearly 6 inches long, 2–3 lines wide, subulate with the slender persistent style.—It appears from a specimen examined by Mr. Bentham, that the upper segments of the calyx are occasionally connate above the middle; but this is not the case in any of our specimens.

2. *C. Plumieri* (Benth.): stem frutescent, the branches puberulent; leaflets broadly ovate, with a short obtuse acumination, broadly rounded at the base, rather coriaceous, glabrous; peduncles 2–3-flowered, shorter than the petiole; bracteoles coriaceous, obtuse, entire, about twice the length of the calyx; upper segments of the calyx very short; legume thick (6 inches long, about 6 lines broad). *Benth. comm. Leg. gen. p.* 54. Clitoria Plumieri, *Turpin, in Pers. syn.* 2. *p.* 303; *Bot. reg. t.* 268; *DC. l. c.; Nutt. gen. l. c.?*

Around New Orleans, *Nuttall*.—"Corolla large, sericeous; keel particularly tomentose. Legume very long and narrow." *Nutt.*—C. Plumieri is a South American and perhaps West Indian species: if the plant of Mr. Nuttall be really the same, it is probably introduced. We have taken the specific character from Bentham.

13. AMPHICARPÆA.* *Ell. in jour. acad. Philad.* 1. *p.* 372; *Nutt. gen.* 2. *p.* 213; *DC. mem. Leg.*, *& prodr.* 2. *p.* 383.

Flowers of two kinds; those of the upper many-flowered racemes perfect and petaliferous, but seldom maturing fruit; those near the base of the stem or on prostrate branches imperfect, but usually fertile. PERFECT FL. Calyx tubular-campanulate, about equally 4-toothed (the two upper teeth being united; sometimes 5-toothed), ebracteolate and slightly gibbous at the base. Vexillum broadly obovate-oblong, subsessile, slightly auricled at the base, incumbent and partly folded round the other petals: keel and wing-petals similar, nearly straight, a little shorter and much narrower than the vexillum, on very long claws, the lamina oblong, that of the wing-petals with a very small callous or saccate spur at the base. Stamens diadelphous. Ovary 4-ovuled raised on a short stipe which is surrounded by a fleshy sheathing disk: style filiform, glabrous: stigma small, capitate. Legume linear-oblong, compressed, somewhat scimitar-shaped, 3–4-seeded. IMPERFECT OR APETALOUS FL. Calyx nearly as in the petaliferous flowers. Petals none, or with the rudiment of a vexillum. Stamens either wanting, or often 5–10, shorter than the ovary, three or four of them with perfect anthers, the others rudimentary: filaments distinct. Ovary nearly sessile, shorter than the calyx, 1–3-ovuled, tipped with a very short recurved style, elongating and protruded beyond the calyx after impregnation. Legumes obovate or pyriform, 1–2-seeded, usually maturing beneath the surface of the ground.—Annual twining or sarmentose herbs. Stems slender, much branched, retrorsely pubescent or hirsute with brownish hairs. Leaves pinnately trifoliolate: leaflets rhombic-ovate, minutely stipellate. Stipules striate, similar to the bracts. Racemes of the petaliferous flowers solitary or in pairs, often somewhat compound, with the flowers clustered or in pairs from the axils of the bracts: the bracts persistent, orbicular, partly clasping, appressed, alternate (but each formed by the union of the pair). Inflorescence of the imperfect or radical flowers similar, but with the filiform peduncles few-flowered, and the bracts distinct

This genus is manifestly correctly referred by Bentham to his subtribe Clitorieæ; although the peculiar inflorescence which appears to exist in the whole group is somewhat masked by the apparently alternate bracts (a deviation, however, which is evidently caused by the union of each pair of bracts into one); but in A. monoica the vexillum is slightly appendiculate at the base, with the margins of the auricles fold ed in, and the upper portion of the style is somewhat indurated, as in Euphaseoleæ.

1. *A. monoica:* racemes of the petaliferous flowers nodding; teeth of the calyx short and broad, somewhat triangular; bracts shorter than the pedi-

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* This genus was established under the name of *Amphicarpa*, which De Candolle, for the sake of a substantive termination, changed to *Amphicarpæa*.

cels.—A. monoica & sarmentosa, *Ell. l. c., & sk.* 2. *p.* 233; *Nutt.! l. c.; DC. l. c.; Darlingt. fl. Cest. p.* 427. Glycine monoica, comosa, & bracteata, *Linn.; Willd. sp.* 3. *p.* 1058 (also G. sarmentosa); *Pursh, fl.* 2. *p.* 485. G. monoica, *Michx.! fl.* 2. *p.* 64; *Bigel. fl. Bost. p.* 276. Cryptolobus Americanus & sarmentosus, *Spreng. syst.* 3. *p.* 218.

Woodlands and thickets, Canada! to Florida! and New-Orleans! west to Red River, Louisiana! Aug.–Sept.—Stems very slender, 3–6 or 8 feet in length, retrorsely pubescent or villous. Leaflets glabrous or more or less hairy, rhombic-ovate or sometimes rather oblong-ovate, a little oblique. Racemes short, on filiform peduncles: bracts somewhat pubescent, rhombic-orbicular. Flowers pale purple or violet, or nearly white. Legumes of the upper racemes nearly glabrous (except the sutures); seeds rather reniform, dark purple. Hypogæan legumes hairy: "seeds of a motley reddish-brown." *Darlingt.*—A. sarmentosa is the more prostrate form, bearing few petaliferous flowers.

2. *A. Pitcheri:* racemes of the petaliferous flowers mostly branching; teeth of the calyx (sometimes 5) lanceolate-subulate, nearly as long as the tube; bracts very broad, silky-canescent, rather longer than the pedicels.

Red River, Arkansas, *Dr. Pitcher !*—Stem, petioles, and peduncles densely hirsute with brownish reflexed hairs. Leaves broadly rhombic-ovate, acute. Bracts large, much broader than wide. Vexillum obscurely auricled at the base. Claws of the wings and keel scarcely longer than the lamina. Ovary 4-ovuled. Fruit not seen.—We know not whether this species produces apetalous flowers.

TRIBE III. GALEGEÆ. *Bronn.* (partly)

Corolla papilionaceous (or otherwise irregular). Stamens diadelphous (9 & 1), or sometimes monadelphous. Legume continuous, dehiscent, 1-celled, several-seeded (rarely with transverse cellular partitions between the seeds, but never separating into joints); or 1–2-seeded and indehiscent. Radicle incurved or inflexed.—Erect herbs, shrubs, or trees. Leaves usually unequally pinnate, seldom stipellate. Inflorescence axillary or terminal, racemose or spicate.

1. *Leaves abruptly pinnate.*

All the N. American genera of this section (except Glottidium) have the legumes contracted between the seeds, which are separated by transverse cellular partitions; they are not, however, truly jointed, as in Hedysareæ, to which they nearly approach. They should perhaps be excluded from this tribe.

14. AGATI. *Adans.; Rheede, Malab. t.* 51; *W. & Arn. prodr. Ind. Or.* 2. *p.* 215.

Calyx campanulate, truncate, slightly bilabiate; the upper lip with 2, the under with 3 short obtuse broad teeth. Vexillum oval-oblong, shorter than the oblong wings: keel large, falcate, obtusely acuminate, its petals distinct at the base and apex. Stamens diadelphous, slightly protruded; the sheath with large auricles at the base. Legume attenuated at the base into a short stipe, linear, elongated, a little compressed, many-seeded, much contracted and with transverse partitions between the seeds, but not jointed. Seed oval.—Small trees of rapid growth and short duration. Leaves abruptly pinnate, with numerous leaflets. Stipules lanceolate, caducous. Racemes axillary, 2–4-flowered. Flowers very large. Legumes pendulous, a foot or more long.

A. grandiflora (Desv.)—*W. & Arn. l. c.*
α. albiflora: flowers white. *W. & Arn. l. c.*—A. grandiflora, *DC. prodr.* 2. *p.* 266. Æschynomene grandiflora, *Linn.*
β. coccinea: flowers red. *W. & Arn. l. c.*—A. coccinea, *Desv.; DC. l. c.* Æschynomene coccinea, *Linn.*

Southern Florida, *Dr. Perrine!* Key West, *Mr. Bennett!* Doubtless introduced: originally natives of the East Indies.—Flowers 3–4 inches long, very showy.

15. SESBANIA. *Pers.; Desv. jour. bot.* 3. *t.* 4; *DC. prodr.* 2. *p.* 264.

Species of Æschynomene, *Linn.*

Calyx with 2 caducous bracteoles at the base, campanulate, 5-toothed; the teeth nearly equal. Vexillum larger than the keel, roundish, with one or two adnate callous slightly folded appendages on its claw: keel obtuse, the petals distinct at the base. Stamens diadelphous, the sheath slightly auricled at the base. Legume linear, very long and slender, cylindrical or compressed, many-seeded, much contracted and with transverse partitions between the seeds, but not truly jointed. Seeds cylindrical-oblong, with a little albumen.—Shrubs or herbs. Leaves abruptly pinnate, with numerous leaflets; the petioles ending in a setaceous point. Stipules small, caducous. Peduncles 1–several-flowered: flowers usually yellow.

1. *S. macrocarpa* (Muhl.): herbaceous, annual, glabrous; leaflets linear-elliptical (15–25 pairs), obtuse, mucronulate, slightly glaucous beneath; racemes 1–4-flowered, shorter than the leaves; legume compressed, somewhat quadrangular (8–12 inches long), subulate with the narrowly ensiform base of the style.—*Muhl. cat. p.* 68; *Ell. sk.* 2. *p.* 265; *Nutt. gen.* 2. *p.* 112; *Bart. fl. Am. Sept.* 1. *p.* 99, *t.* 28; *DC. prodr.* 2. *p.* 265.

Wet places, S. Carolina, Louisiana! Arkansas! and Texas! Aug.–Oct.—Stem 2–4 (–12, *Ell.*) feet high. Leaves 6–12 inches long. Corolla yellowish, dotted with purple externally: vexillum reflexed. Legume about 2 lines wide; the margins nearly even (not narrowed between the seeds).

16. DAUBENTONIA. *DC. mem. Leg., & prodr.* 2. *p.* 267.

Calyx campanulate, somewhat truncate, with 5 minute teeth. Vexillum roundish, stipitate: keel very obtuse. Stamens diadelphous, with the free stamen and the sheath as if geniculate at the base. Style filiform, glabrous. Legume on a long stipe, oblong, compressed, coriaceous [indehiscent], with 4 wings rising from the margins of the valves and produced beyond the sutures, the seeds separated by transverse partitions.—Mexican shrubs. Stipules oblong. Leaves abruptly pinnate. Racemes simple. *DC.*

1. *D. longifolia?* (DC.): leaflets 11–12 pairs; racemes rather shorter than the leaf. *DC. l. c.*—Æschynomene longifolia, *Cav. ic.* 4. *t.* 315. Piscidia longifolia, *Willd.*

Texas, *Drummond!*—Not being able at present to consult the figure of Cavanilles, we are in doubt whether the Texan plant be the D. longifolia, *DC.* The leaflets are for the most part obtuse and mucronate. The keel, moreover, is not "very obtuse", and the seeds are subglobose.

17. GLOTTIDIUM. *Desv. jour. bot.* 3. *p.* 119, *t.* 1; *DC. prodr.* 2. *p.* 266.

Calyx campanulate, somewhat obliquely truncate, 5-toothed; teeth small, rather obtuse, nearly equal. Vexillum reniform, very short and broad, slightly unguiculate: wings oval-oblong: keel-petals coherent above the middle. Stamens diadelphous. Style short, incurved at the summit. Legume elliptical-oblong, compressed, acute at each end, stipitate, cuspidate with the style, 1-celled, 2-valved, 2-seeded; valves at length separating into an exterior rather coriaceous membranous portion, and an internal membrane which encloses the seeds. Seeds compressed, transversely oblong: radicle thick, inflexed.—An annual glabrous herb. Leaves abruptly pinnate, with numerous leaflets; the petiole ending in a bristle: primordial leaves simple, ovate. Racemes axillary, few-flowered. Flowers small, yellow.

G. Floridanum (DC. l. c.)—Robinia vesicaria, *Jacq. ic. rar.* 1, *t.* 148. Phaca Floridana, *Willd. sp.* 3. *p.* 1252. Sesbania platycarpa, *Pers. syn.* 2. *p.* 316; *Nutt.! gen.* 2. *p.* 112. S. disperma, *Pursh, fl.* 2. *p.* 485. S. vesicaria, *Ell. sk.* 2. *p.* 222. Æschynomene platycarpa, *Michx.! fl.* 2. *p.* 75.

Damp soils, S. Carolina to Florida! Louisiana! and Texas! Aug.–Sept. —Plant 4–6 feet high. Leaflets linear-oblong, mucronate. Peduncles filiform, shorter than the leaves, 4–8-flowered. Calyx very short. Legume about 2 inches long, on a slender stipe; the outer coriaceo-membranaceous portion at length falling away, leaving the seeds enclosed in the thin white inner membrane.

2. *Leaves unequally pinnate (in* Psoralea *various).*

A. Corolla truly papilionaceous: flowers in racemes.

18. ROBINIA. *Linn.* (in part); *DC. mem. Leg. p.* 273, *& prodr.* 2. *p.* 261.

Calyx short and somewhat campanulate, 5-toothed or 5-cleft; the 2 upper segments shorter, approximated or cohering. Vexillum broad and large: keel obtuse. Stamens diadelphous, deciduous. Style bearded along the inside (next the free stamen). Legume many-seeded, compressed, nearly sessile, the seminiferous suture margined; valves flat and thin. Seeds flat.—Trees or shrubs (N. American), usually bearing stipular spines. Leaves unequally pinnate: leaflets petiolulate, stipellate. Flowers showy, white or rose-color, in simple usually pendant axillary racemes.—*Locust-tree.*

1. *R. Pseudacacia* (Linn.): branches virgate, armed with stipular prickles; racemes loose, drooping, and (with the legumes) smooth; leaflets ovate and oblong-ovate.—*Lam. ill. t.* 606; *Michx.! fl.* 2. *p.* 65; *Pursh, fl.* 2. *p.* 487; *Ell. sk.* 2. *p.* 242; *Michx. f. sylv.* 2. *p.* 1, *t.* 76; *DC. l. c.; Darlingt. fl. Cest. p.* 410. Pseudacacia, *Tourn. inst. t.* 417.

Fertile soils, particularly west of the Alleghany Mountains to Arkansas! not indigenous north of Pennsylvania, or near the sea-coast in the Southern States. May–June.—Tree 20–70 or 90 feet high: wood yellowish, compact and very durable. Leaflets 4–8 pairs, with minute rigid setaceous partial stipules. Racemes 3–5 inches long. Flowers as large as a Pea-blossom, white, fragrant. Legumes 2–3 inches long, about half an inch wide, 4–6-seeded.—*Common Locust-tree.*

2. *R. viscosa* (Vent.): stipular spines very short; branchlets, petioles, and legumes glandular-viscid; leaflets ovate; racemes crowded.—*Vent. hort. Cels. t.* 4. *Duham. arb.* 2, *t.* 17; *Michx.! fl.* 2. *p.* 65; *Ell. l. c.; Michx. f. sylv.* 2. *p.* 15, *t.* 77; *DC. l. c.* R. glutinosa, *Bot. mag. t.* 560.

Mountains of Georgia and Carolina. May–June.—Tree 20–40 feet high. Leaflets 5–7 pairs. Racemes rather ovate. Bracts lanceolate, with a long setaceous point, caducous. Flowers white tinged with rose-color, inodorous. Legumes linear-lanceolate, 2–3 inches long.—*Clammy Locust.*—R. dubia, *Desv. jour. bot.* (*DC. l. c.*) is doubtless, as De Candolle suspects, a garden hybrid between this species and R. Pseudacacia.

3. *R. hispida* (Linn.): stipular spines scarcely any; racemes (loose), branchlets, calyx, and legumes hispid.—*Catesb. Car. t.* 20; *Michx.! fl.* 2. *p.* 65; *Bot. mag. t.* 311; *Pursh, fl.* 2. *p.* 487; *Ell. l. c.; DC. l. c.* R. montana, *Bartr.* R. rosea, *Duham. arb.* 2, *t.* 18.

β. *rosea* (Pursh, l. c.): leaflets mostly scattered; branchlets and petioles not hispid.—R. hispida, var. rosea, *Ell. l. c.?* R. hispida γ. macrophylla, *DC.?*

γ. *nana* (Ell. l. c.): plant scarcely a foot high.

Mountains of Georgia! and S. Carolina. β. High mountains of Virginia and Carolina, *Pursh.* γ. Pine barrens, near Columbia, S. Carolina, *Elliott.* April–May.—Shrub 4–8 feet high (or in cultivation larger): young branches reddish, very hispid. Leaflets oval or roundish, 5–6 pairs. Flowers about twice the size of those of R. Pseudacacia, deep rose-color, inodorous.—The R. hispida, var. rosea of Elliott is said to have spiny stipules, and the branchlets, petioles, and lower surface of the leaves pubescent. Can it be a form of R. viscosa?

19. TEPHROSIA. *Pers. syn.* 2. *p.* 328; *DC. prodr.* 2. *p.* 248.

Calyx without bracteoles, about equally 5-toothed or 5-cleft. Vexillum large, roundish, spreading or reflexed, usually silky or pubescent on the outside: keel obtuse, cohering with the wings. Stamens monadelphous or sometimes diadelphous; the tenth filament sometimes half united with the others. Style filiform, bearded longitudinally, or glabrous: stigma terminal. Legume commonly sessile and much compressed, linear, many-seeded; valves usually flat. Seeds compressed.—Shrubby or herbaceous plants, erect or procumbent, silky-villous. Leaves unequally pinnate (rarely reduced to a single leaflet). Stipules free from the petiole, lanceolate or subulate, never sagittate. Racemes terminal or opposite to the leaves, or axillary. Flowers white or purplish.

The North American species are all herbaceous plants; with the lobes of the calyx broad at the base and acuminated; the style longitudinally bearded on the inside; and the legumes more or less hispid, villous, or velvety: they belong to the section Brissonia, *DC.*: but the stamens are mostly diadelphous.

§ 1. *Peduncles axillary,* 1–2-*flowered, often fascicled, aggregated at the summit of the stem into a crowded raceme or panicle.*

1. *T. Virginiana* (Pers.): villous-pubescent; stem erect; leaves subsessile; leaflets 8–14 pairs, linear-oblong or elliptical, obtuse or rather acute,

mucronate, silky-villous beneath, minutely silky-pubescent above; raceme oblong, sessile; calyx very villous, the segments acuminate-cuspidate, about the length of the tube.—*Pers. syn.* 2. *p.* 329; *Ell. sk.* 2. *p.* 245; *Nutt.! gen.* 2. *p.* 119; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 139. Galega Virginiana, *Linn.; Michx.! fl.* 2. *p.* 67.

β. glabra (Nutt. mss.): "leaflets nearly glabrous when old."

γ. holosericea: stem and raceme densely villous; leaflets very silky-pubescent on both sides, often sublanceolate and rather acute.—T. holosericea, *Nutt. in jour. acad. Philad.* 7. *p.* 105.

Dry sandy soil, Canada! to Florida! and the western part of Louisiana! *β.* Georgia, *Nuttall.* *γ.* Arkansas, *Nuttall, Dr. Pitcher!* Illinois, *Mr. Buckley!* June–July. Stems simple, 1–2 feet high, growing in patches, clothed with a whitish villous pubescence. Flowers large. Corolla dull yellow tinged with purple: keel-petals very broad. Legumes 2 inches long, somewhat falcate, villous.—Mr. Nuttall remarks that the wings are calcarate at the base as in Indigofera; but we do not observe this.—Our Arkansan specimen of what is doubtless T. holosericea, *Nutt.* has a somewhat different aspect, and the leaflets are mostly inclining to lanceolate; but the specimen from Illinois manifestly connects it with the ordinary form of T. Virginiana.

§ 2. *Peduncles (few) terminal or opposite to the leaves.*

2. *T. onobrychoides* (Nutt.): pilose with somewhat rusty hairs; stem mostly erect and simple; leaves subsessile; leaflets 8–12 pairs, cuneate-oblong, obtuse or retuse, mucronulate, silky-hirsute beneath with brownish hairs, at length smoothish above; raceme very long, many-flowered (commonly only terminal); teeth of the calyx triangular, shorter than the tube, the lowest subulate and longer than the others; legumes puberulent.—*Nutt! in jour. acad. Philad.* 7. *p.* 104.

Plains of Arkansas, *Nuttall! Dr. Pitcher!* Red River, Louisiana, *Dr. Hale!*—Stem 2–3 feet high, stout. Leaflets often 1½ inch or more in length, and half an inch wide. Stipules subulate, caducous. Raceme 1–2 feet long, bearing flowers for the greater part of its length: pedicels 2–4 together on alternate nodes, very short. Calyx villous-hispid. Corolla red mixed with white.—Very nearly allied to the succeeding species. The pubescence is sometimes rusty-colored, and sometimes whitish.

3. *T. spicata:* pilose-hispid with rusty hairs; stem decumbent or nearly erect, scarcely branched; leaves subsessile; leaflets 4–7 pairs, oval or oblong, often slightly cuneate at the base, obtuse or slightly emarginate, mucronate, silky-villous beneath, minutely silky-pubescent above; peduncles long, few-flowered; segments of the calyx lanceolate-subulate, longer than the tube; legumes minutely hispid.—T. paucifolia, *Nutt.! gen.* 2. *p.* 119; *Ell. sk.* 2. *p.* 246; *DC. l. c.* T. hispida, *DC. l. c.?* Galega spicata, *Walt. Car. p.* 188. G. villosa, *Michx.! fl.* 2. *p.* 67. G. paucifolia, *Curtis, in Bost. jour. nat. hist.* 1. *p.* 121.

Dry soils, Virginia! to Florida! west to the Mississippi! June–Aug.—Stem about 2 feet long, rather slender. Leaves often few and remote, 4–5 or often more, on each stem: leaflets an inch long. Stipules lanceolate, rather persistent. Peduncles 8–12 or 18 inches long, 3–6- (rarely 8 or 10-) flowered: pedicels solitary or in pairs, shorter than the flowers. Calyx hispid; the lower segment a little longest. Corolla purplish-red. Legume 2 inches long, slightly falcate.—A very common plant in the Southern States; and doubtless the Galega spicata of Walter.

4. *T. hispidula* (Pursh): stem erect or procumbent, slender, dichotomous, slightly pubescent; leaflets 5–9 pairs, elliptical-oblong or linear-oblong, glabrous above, hirsute beneath, usually more or less acute, often retuse, con-

spicuously mucronate; the lowest pair rather distant from the base of the petiole; racemes as long as the leaves, at length elongated, few-flowered; peduncles usually ancipital; teeth of the calyx triangular-lanceolate, short; legume nearly straight or slightly falcate, minutely hispid.—*Pursh, fl.* 2. *p.* 489; *Ell. sk.* 2. *p.* 245; *DC. prodr.* 2. *p.* 250. Galega hispidula, *Michx.! fl.* 2. *p.* 68; *Curtis! in Bost. jour. nat. hist.* 1. *p.* 121. T. gracilis, *Nutt. gen.* 2. *p.* 119; *DC. l. c.*

β. hirsute with short spreading hairs; leaflets large, cuneate-oblong; legumes pubescent and whitish.—Galega ambigua, *Curtis! l. c.*

γ. erect, very hirsute with rusty spreading hairs, scarcely branched; leaflets 6–8 pairs, linear or linear-lanceolate, reflexed; the terminal one much the longest, with a strong marginal vein; peduncle much longer than the leaves.—T. flexuosa, *Chapman! mss.*

δ. erect, nearly glabrous; leaflets 2–3 pairs, linear-lanceolote, slightly hirsute beneath, the terminal one much the longest; marginal veins very distinct.

Dry sandy soils, Virginia to Florida! and Alabama! *β.* North Carolina, *Curtis! γ.* Middle Florida, *Dr. Chapman! δ.* Alabama, *Dr. Gates!* May–August.—Stem 1–2 feet long, usually dichotomous. Leaflets 1–1½ inch long (the terminal one in *γ.* & *δ.* nearly 2 inches). Stipules linear-subulate. Peduncles 3–4-flowered; 2 of the flowers usually at the summit, and 1–2 remote. Flowers about half an inch long, reddish-purple. Calyx ¼ the length of the corolla. Vexillum nearly orbicular. Upper stamen quite free to the base. Legume 6–12-seeded. Seeds roundish-reniform, dark brown.—T. elegans, *Nutt.** seems to be a form of this difficult and polymorphous species.

5. *T. chrysophylla* (Pursh): prostrate, dichotomous, pubescent; leaves nearly sessile; leaflets 2–3 (rarely 4) pairs, cuneate-obovate, very obtuse, glabrous above, silky-hirsute beneath; peduncles longer than the leaves, usually 3-flowered; legume minutely hispid.—*Pursh, fl.* 2. *p.* 489; *Ell. sk.* 2. *p.* 247. T. prostrata, *Nutt. gen.* 2. *p.* 120 (excl. syn. *Michx.*); *DC. prodr.* 2. *p.* 250.

Sandy soils, near Savannah, *Nuttall, Mr. Forbes!* Milledgeville, Georgia, *Dr. Boykin!* Middle Florida, *Dr. Chapman!* May–Aug.—Stems dichotomous, about a foot long; pubescence spreading or appressed. Leaves 2–3 inches long; leaflets 6–10 lines long, coriaceous; the lowest pair close to the base of the petiole. Peduncle a little compressed. Flowers as in the preceding species. Legume 8–10-seeded.—The whole plant has a yellowish hue. T. chrysophylla may be best distinguished from the preceding species by its nearly sessile leaves and broader and fewer leaflets; but even these characters appear to be not entirely constant; and we have some forms of which we are in doubt to which species they should be referred.

23. GLYCYRRHIZA. *Tourn.; Linn.; DC. prodr.* 2. *p.* 247.

Calyx without bracteoles, tubular, gibbous at the base, 5-cleft, bilabiate; the 2 upper segments partly united. Vexillum ovate-lanceolate, straight: keel-petals and wings straight, acute, the former united above. Stamens diadelphous. Style filiform. Legume ovate or oblong, compressed, often echinate, dehiscent?, 1–4-seeded.—Perennial herbs: roots sweet. Leaves unequally pinnate. Racemes spicate, many-flowered. Flowers white, violet, or blue.—*Liquorice.*

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* *T. elegans* (Nutt.): decumbent; slightly pubescent; leaves subsessile; leaflets (15–17) oblong-elliptical, rather acute; peduncles filiform, few-flowered, longer than the leaf; segments of the calyx acuminate. *Nutt. in jour. acad. Philad.* 7. *p.* 165.—Alabama.—Peduncles producing a few reddish-purple flowers toward their extremity. Legume villous.

1. *G. lepidota* (Nutt.): leaflets oblong-lanceolate, acute, minutely strigose with glandular scales beneath; stipules linear-subulate; spikes pedunculate, nearly the length of the leaves; bracts lanceolate, acuminate; legumes densely beset with hooked bristles, 2–6-seeded.—*Nutt.! gen.* 2. *p.* 106; *Bot. mag. t.* 2150; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 138.

On the Missouri, from near St. Louis! and Arkansas! to Oregon! and north to the Saskatchawan.—Roots long and creeping, with the taste of liquorice. Stem 2–5 feet high. Flowers whitish. Legume resembling the fruit of Xanthium spinosum, but rather smaller.—Mr. Nuttall remarks that this species is very nearly allied to G. fœtida of Northern Africa; and Hooker, on comparing the the two plants, could find no distinguishing character.

2. *G. glutinosa* (Nutt. mss.): "leaflets oblong and oblong-lanceolate, strigose with scaly glands; stems and calyx pubescent with glandular hairs; spikes pedunculate, much shorter than the leaves; bracts with a long acuminate point; calyx nearly equal.

"Banks of Lewis's River, with the preceding, which it closely resembles: but the calyx and stems, as well as peduncles, are thickly covered with glandlar hairs, and the peduncles are scarcely half the length of the leaves." *Nuttall.*

24. INDIGOFERA. *Linn.; Lam. ill. t.* 626; *Gærtn. fr. t.* 148; *DC. prodr.* 2. *p.* 221; *W. & Arn. prodr. Ind. Or.* 1. *p.* 198.

Calyx 5-cleft; segments acute. Vexillum roundish, emarginate: keel furnished with a subulate spur on each side, at length often bending back elastically. Stamens diadelphous. Style filiform, glabrous. Legume continuous, 2-valved, 1–many-seeded. Seeds usually truncated, often separated by cellular spurious partitions.—Herbaceous or shrubby plants. Leaves various, usually unequally pinnate or digitate: hairs, either all or some of them, appressed and attached by their middle. Stipules small, not united with the petiole. Flowers in axillary racemes, purple, blue, or white; many of the upper ones of each raceme frequently becoming abortive.—*Indigo-plant.*

1. *I. Caroliniana* (Walt.): stem herbaceous, erect, with terete branches, leaves on short petioles, unequally pinnate; leaflets 5–7 pairs, oval-oblong, petiolulate, clothed with a sparse appressed pubescence; racemes slender, longer than the leaves; legumes pendulous, oblong, turgid, about 2-seeded, reticulately rugose.—*Walt. fl. Car. p.* 187; *Michx.! fl.* 2. *p.* 68; *Ell. sk.* 2. *p.* 244; *DC. prodr.* 2. *p.* 229.

Dry sterile soils, North Carolina! to Florida! July–Sept.—♃ Stem 3–7 feet high, branched. Leaflets nearly an inch long, obtuse or retuse, mucronate, somewhat glaucous beneath. Racemes 3–6 inches long. Flowers pedicellate, one-third of an inch long. Calyx very small; teeth short, acute. Corolla yellowish-brown: vexillum ovate, hairy: keel and wings glabrous. Legume nearly glabrous, 4–5 lines long, pointed with the base of the style.

2. *I. leptosepala* (Nutt! mss.): rough and cinereous with appressed hairs; stem herbaceous, decumbent; leaves unequally pinnate, on short petioles; leaflets 3–4 pairs, obovate-oblong or cuneiform, nearly sessile, somewhat glabrous on the upper surface; racemes pedunculate, longer than the leaves, 6–15-flowered, the flowers nearly sessile; calyx deeply parted; the segments attenuate-subulate, equal; legumes linear, reflexed, somewhat quadrangular

or nearly terete, straight and even, 6–9-seeded.—I. n. sp. *Torr.! in ann. lyc. New-York*, 2. *p.* 170.

Plains of Arkansas, *Nuttall! Dr. James! Dr. Leavenworth!* also Georgia, *Nuttall!*—♃ "Root penetrating deeply, flagellate. Stems procumbent, 2–3 feet long. Stipules subulate, minute. Leaves very much like those of the Common Indigo; strigose and almost hoary beneath. Flowers pale scarlet. Legumes pubescent, an inch and a half long, acuminated by the persistent style." *Nutt.*

25. PSORALEA. *Linn.; Lam. ill. t.* 614; *DC. prodr.* 2. *p.* 216.

Calyx campanulate, persistent, 5-cleft, often glandular; segments acuminate, the lowest one somewhat longest. Stamens usually diadelphous, the tenth filament sometimes united with the others at the base. Legume about the length of the calyx, indehiscent, 1-seeded, sometimes beaked.—Shrubby or perennial herbaceous plants, usually dotted or almost tuberculate with glands. Leaves various, usually pinnately or palmately 3–5-foliolate. Stipules cohering with the base of the petiole. Flowers purple, blue, or white, usually in axillary spikes or racemes.

In all the North American Psoraleæ the filaments (except the upper one) are united their whole length, forming a 9-toothed stamineal sheath; the alternate teeth shorter; and often only 5 of the anthers are perfect.

* *Leaves palmately 3–5-foliolate.*

1. *P. lanceolata* (Pursh): nearly glabrous; stems assurgent, often dichotomous, erect; leaves 3-foliolate, dotted (as likewise the calyx) with black glands; leaflets linear-lanceolate or elliptical oblong, rather obtuse, slightly mucronate, sessile; peduncles longer than the leaves; spikes capitate, many-flowered; bracts deciduous; teeth of the calyx minute, acute, nearly equal; legumes globose, hirsute.—*Pursh! fl.* 2. *p.* 475; *Hook.! fl. Bor.-Am.* 1. *p.* 135, *t.* 51. P. elliptica, *Pursh! l. c.* P. arenaria, *Nutt.! gen.* 2. *p.* 103; *DC. prodr.* 2. *p.* 219.

Sterile sandy soils above the Platte, and west to the Pacific, *Lewis!* (v. s. in herb. *Lamb.*) *Nuttall! Douglas.*—Plant slightly hirsute with appressed hairs. Leaflets about an inch long, variable in breadth, narrowed downward, the lower ones broader. Raceme 8–10-flowered. Flowers white tinged with blue. Legume as large as a pea.

2. *P. laxiflora* (Nutt. mss.): "sparingly glandular; young shoots pubescent: stem dichotomous; stipules minute; leaves 3-foliolate; leaflets sessile, long and linear, or somewhat oblong, apiculate; peduncles longer than the leaves; spikes short, with the flowers somewhat distant; calyx small and pubescent, the teeth obtuse.

"Plains of the Platte.—Resembles the preceding, but the spikes are larger, the bracts very minute and the leaves longer." *Nuttall.*

3. *P. tenuiflora* (Pursh): nearly glabrous and conspicuously dotted with blackish glands; stem diffuse, with the branches slender; leaves 3-foliolate; leaflets oblong-elliptical, obtuse; racemes filiform, few-flowered, interrupted; segments of the calyx nearly equal; bracts shorter than the pedicels, persistent.—*Pursh! fl.* 2. *p.* 475; *Nutt. gen.* 2. *p.* 103; *DC. prodr.* 2. *p.* 220.

Plains of the Missouri near the Arikaree village, *Nuttall, Lewis! Bradbury!* (v. s. in herb. *Lamb.*)—Stem 2 feet high. Leaves on short petioles; leaflets 4–6 lines long, thick, petiolulate. Racemes 2–3 inches long; the flowers 3 together, very small, pale purple.—Habit of Baptisia tinctoria.

4. *P. longifolia* (Pursh): whole plant silky-villous; leaves 3-foliolate, obscurely glandular; leaflets linear, elongated; spikes pedunculate, loose, shorter than the leaves; teeth of the calyx and bracts lanceolate.—*Pursh, fl.* 2. *p.* 741; *DC. prodr.* 2. *p.* 220.

On the Missouri, *Bradbury!* (v. s. in herb. *Lamb.*)—Stem about a foot high, apparently assurgent. Leaflets an inch long, scarcely one line wide. Flower small.

5. *P. linearifolia:* slightly pubescent with appressed hairs; stem tall, slender, divaricately branched; leaves 3-foliolate, on short petioles; leaflets narrowly-linear, elongated, mucronate, the upper surface dotted with black glands; stipules minute, subulate, deciduous; peduncles filiform; racemes loose, few-flowered, much longer than the leaves; calyx glandular, the teeth lanceolate, acute, the lower one elongated.

Arkansas, *Beyrich!* communicated by *Dr. Leavenworth.* Stem sprinkled with a few black dots. Leaflets 2–3 inches long, 1–2 lines wide, scarcely glandular beneath. Racemes 6–8-flowered. Bracts lanceolate. Pedicels slender, longer than the flower.

6. *P. scabra* (Nutt. mss.): "much branched, somewhat hirsute when young; leaves 3-foliolate, glandular; leaflets all sessile, narrowly-linear, apiculate; stipules minute, deciduous; racemes few-flowered, on short peduncles; calyx glandular, the teeth obtuse.

"On the Walla-wallah, *Mr. John Townsend.* A slender species, with small leaves and flowers.—In habit allied to P. glandulosa of Chili." *Nuttall.*

7. *P. digitata* (Nutt.! mss.): canescent, diffusely branched; leaves 5-foliolate; leaflets cuneate-oblong, and oblong-linear, with an abrupt rigid point, minutely dotted; stipules lanceolate, reflexed; spikes elongated, interrupted, the clusters 3–6-flowered; flowers sessile; bracts obcordate or reniform; calyx villous; segments ovate, acuminate, the lowest one produced.

Sandhills of Red River, Arkansas, *Nuttall! Dr. Leavenworth!* Western parts of Arkansas, *Beyrich!* May.—Stem bushy, with slender branches. Leaflets about one inch long, 2–4 lines wide, glabrous above, hirsute beneath: petioles shorter than the leaflets. Spikes many times longer than the leaves. Calyx half as long as the corolla; lowest segment one-third longer than the others. Vexillum roundish-obovate. Legume orbicular-ovate, compressed, hirsute, not wrinkled. Seeds ovate.

8. *P. floribunda* (Nutt.! mss.): canescent, not glandular, much branched; leaves 3–5-foliolate; leaflets varying from linear to obovate-oblong, slightly mucronate; stipules setaceous, minute; racemes many-flowered, oblong, scarcely interrupted, twice as long as the leaves; pedicels as long as the flowers; bracts small, ovate, acuminate; teeth of the calyx somewhat equal, ovate, acute; vexillum nearly orbicular.

Plains of the Arkansas and Platte, nearly to the Rocky Mountains, *Nuttall!* Arkansas, *Dr. Pitcher!* and *Dr. Leavenworth!* Illinois, *Mr. Buckley!* June.—Stem 2–4 feet high, somewhat spreading. Leaflets 2–4 lines wide, longer than the petiole. Racemes 40–50-flowered: pedicels rather longer than the bracts. Flowers about one-fourth of an inch long.

9. *P. obtusiloba:* canescent; branches spreading; leaves 3- rarely 5-foliolate; leaflets oblong-obovate, obtuse or slightly emarginate, finely dotted; stipules very minute; racemes 3 times as long as the leaves, oblong, loose, 10–15-flowered; bracts minute, broadly ovate, abruptly acuminate, spreading; calyx very short; the teeth ovate, nearly equal, obtuse; vexillum roundish.

Texas, *Drummond!*—Plant clothed in every part with a minute appressed pubescence, much branched. Leaflets about ¾ of an inch in length. Stipules almost none. Calyx scarcely ½ the length of the petals. Legume nearly glabrous, not wrinkled.

10. *P. canescens* (Michx.): canescently pubescent; lower leaves 3-foliolate, upper ones unifoliolate, on short petioles; leaflets orbicular-obovate, abruptly narrowed at the base and petiolulate, dotted with glands; stipules subulate, about as long as the petiole; racemes longer than the leaves, 4–7-flowered, the flowers pedicellate; calyx inflated, conspicuously glandular, the lower segment produced.—*Michx.! fl.* 2. *p.* 57; *Pursh! fl.* 2. *p.* 475; *Ell. sk.* 2. *p.* 195; *DC. prodr.* 2. *p.* 220.

Sandy soils, North Carolina! to Florida! May.-July.—Root fusiform. Stem much branched, 2–3 feet high, spreading. Leaflets an inch or more wide, often slightly emarginate. Calyx hirsute when young. Corolla at first blue, then yellowish (*Le Conte*). Legume with a short ensiform point, very glandular, not wrinkled.

11. *P. argophylla* (Pursh): very silky and silvery, erect, divaricately branched; leaves 3–5-foliolate; leaflets elliptical-lanceolate; spikes pedunculate, interrupted, longer than the leaves; bracts ovate-lanceolate; flowers nearly sessile, 2–3 to each bract; lower tooth of the calyx very long.—*Pursh! fl.* 2. *p.* 475; *Hook.! fl. Bor.-Am.* 2. *p.* 136, *t.* 53. P. incana, *Nutt.! gen.* 2. *p.* 102; *DC. prodr.* 2. *p.* 219.

Dry open plains on the Missouri. *Lewis! Nuttall!* on the Saskatchawan, &c., *Drummond!* Falls of St. Anthony, *Dr. Houghton!* July.—Plant 1–2 feet high, every part densely clothed with soft silvery-white appressed hairs.—Leaflets 1–2 inches long. Stipules subulate. Spikes about twice as long as the leaves. Lower tooth of the calyx as long as the corolla. Petals blue: vexillum obovate, the auricles small and callous.

12. *P. campestris* (Nutt.! mss.): "densely canescently hirsute with short white appressed hairs; leaves 5-foliolate, the uppermost sometimes 3-foliolate; leaflets linear and oblong-linear, rather obtuse, nearly glabrous above; peduncles elongated; spike interrupted; bracts 3-flowered, broadly ovate, acuminate; lower tooth of the calyx elongated.

"Plains of the Platte. June.—Allied to the preceding, but much less hirsute and silvery, and more branching. Leaflets 1–1½ inch long and 1–2 lines wide. Stipules linear. Bracts of the flower-buds nearly orbicular." *Nuttall.*

13. *P. cryptocarpa:* stem somewhat divaricately branched, canescently hairy with an appressed pubescence; leaves 5-foliolate; leaflets elliptical-oblong, rather obtuse, mucronate, about as long as the petiole, punctate; stipules subulate; peduncles longer than the leaves; spikes ovate, compact; bracts lanceolate, cuspidate, shorter than the flower; calyx conspicuously glandular, large, entirely covering the ovate nearly glabrous scarcely pointed legume; the teeth triangular-lanceolate, acuminate, nearly equal, the 2 upper ones united to the middle.

Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*—Stem 1–2 feet high, terete, when old nearly glabrous. Leaflets 1½ inch long. Calyx somewhat inflated, gibbous at the base. Legume membranaceous, slightly tipped with the base of the style, not wrinkled.

14. *P. brachiata* (Dougl.): stem erect, somewhat branched, nearly hispid with long spreading hairs; leaves 5-foliolate, hirsute with appressed hairs; leaflets elliptical or obovate-oblong, rather obtuse; peduncles elongated; spikes oblong; flowers erect, sessile; bracts as long as the flower; teeth of the calyx lanceolate, the 2 upper ones united above the middle.—*Hook.! fl. Bor.-Am.* 1. *p.* 137, *t.* 53.

Plains of the Saskatchawan, *Drummond! Douglas.* Root fusiform, thick, somewhat farinaceous. Stem 12–18 inches high. Stipules lanceolate, large. Leaves 1½ inch long. Racemes 2–4 inches in length. Bracts lanceolate, foliaceous, about as long as the flowers. Calyx somewhat inflated, lower tooth rather longest. Vexillum white: keel blue.—*Navet de Prairie* of the Canadian "voyageurs," according to Mr. Douglas.

14. *P. esculenta* (Pursh): whole plant hirsute; stem erect, somewhat branched; leaves 5-foliolate; leaflets lanceolate; spikes dense; segments of the calyx lanceolate, a little shorter than the corolla; legumes with an ensiform beak; root thick and fusiform.—*Pursh, fl.* 2. *p.* 475, *t.* 22; *DC. prodr.* 2. *p.* 219.

β. nearly stemless; leaflets obovate-oblong.—P. esculenta, *Nutt.! gen.* 2. *p.* 102.

Banks of the Missouri, *Lewis! β.* On the same river and on the high and bare hills of the lead mines near St. Louis, *Nuttall!* Louisiana, west of the Mississippi, and in Texas, *Dr. Leavenworth!* June–July.—Root usually about the size of a walnut, scarcely farinaceous, solid and tough. Stem a foot or more high (in *β.* only 1–3 inches above the ground). Leaflets slightly dotted. Spikes capitate. Flowers pale blue: vexillum obovate, marked with 2 callosities towards the base. Legume covered with the calyx, hirsute. *Pursh.*—In our specimens of *β.* the leaflets are about 2 inches long and ¾ of an inch wide; the segments of the calyx are equal, the 2 upper ones not united; and the long ensiform point of the legume is much exserted. According to Nuttall the root of this species is the *Pomme de Prairie* (also called *Pomme blanche*) of the Canadian voyageurs. The form of the plant described by Pursh is very near P. brachiata. Neither species grows west of the mountains.

16. *P. hypogæa* (Nutt.! mss.): stemless, hirsute with whitish appressed hairs; leaves 5–7-foliolate; leaflets linear-lanceolate, or linear-oblong, usually acute; spikes capitate, on peduncles much shorter than the petioles; segments of the calyx linear, acuminate, the lowest one elongated.

"Plains of the Platte, with P. esculenta.—Root tuberous, oblong, edible, about an inch long. Leaflets 1–1½ inch long, 2–3 lines wide; upper surface nearly glabrous. Spikes nearly sessile, or on peduncles scarcely more than an inch long. Bracts lanceolate. Calyx cleft below the middle; lowest segment lanceolate, the others almost subulate, curved upward. Corolla pale dull blue: vexillum oblong, about as long as the very narrow wings, and twice as long as the keel." *Nuttall.*

17. *P. subacaulis:* nearly stemless; peduncles and petioles hirsute with spreading hairs; leaves on very long petioles, 7-foliolate; leaflets obovate-oblong, nearly glabrous above, the midrib beneath and margins hairy; peduncles longer than the leaves; spikes ovate, rather dense; bracts and stipules ovate, acuminate; calyx much shorter than the corolla; the teeth obtuse, lowest one produced, the others very short.

Rocky grounds near Nashville, Tennessee, *Dr. Roane!* April–May.—Stem scarcely rising above the ground. Leaflets one inch long, sprinkled with very minute dots; the hairs on the midrib spreading. Peduncles 6–8 inches long. Stipules and bracts scarious. Spikes 20–40-flowered.—A very distinct species, but allied to the preceding.

18. *P. Lupinellus* (Michx.): glabrous; stem slender; leaflets 5–7-foliolate, filiform-linear; racemes much longer than the leaves, many-flowered; bracts minute, about as long as the pedicels; legumes somewhat lunate, obliquely rugose.—*Michx.! fl.* 2. *p.* 58; *Nutt. gen.* 2. *p.* 102; *Ell. sk.* 2. *p.* 196. P. lupinella, *DC. prodr.* 2. *p.* 220.

Barren sandy places, South Carolina! to Florida! May–July.—Stem about 2 feet high, somewhat branched. Leaflets less than a line wide, shorter than the very slender petiole. Peduncles thick. Raceme 10–20-flowered. Flowers 3–4 lines long, purplish. Calyx glandular; teeth short, nearly equal. Vexillum suborbicular. Legume small, with a short recurved point.

* * *Leaves pinnately trifoliolate (rarely unifoliolate).*

19. *P. virgata* (Nutt.): nearly glabrous; stem virgate; leaves 1-foliolate (lower ones rarely 2–3-foliolate), very remote; leaflets linear; stipules setaceous; peduncles shorter than the leaves; spikes ovate-oblong; bracts oblong; calyx glandular, half as long as the corolla; segments lanceolate, the lower one a little elongated.—*Nutt.! gen.* 2. *p.* 104; *Ell.! sk.* 2. *p.* 197; *DC. prodr.* 2. *p.* 218. P. simplicifolia, *herb. Baldw.!*

Near St. Mary's, Georgia, *Dr. Baldwin!*—Stem about 2 feet high, sparingly branched. Leaflets of the radical leaves oblong; of the upper ones 2–4 inches long and 2–4 lines wide. Spikes rather compact: bracts deciduous. Flowers pale violet, about ¼ of an inch long.

20. *P. melilotoides* (Michx.): sparingly pubescent; leaves 3-foliolate; leaflets oblong-lanceolate, dotted with glands; spikes oblong; bracts broadly cordate and (like the calyx) glandular, conspicuously acuminate; teeth of the calyx triangular-ovate, the lowest one longest; legumes orbicular, with strong transverse wrinkles.—*Michx.! fl.* 2. *p.* 58; *Ell. sk.* 2. *p.* 197; *DC. prodr.* 2. *p.* 220; *Bart. fl. Am. Sept.* 2, *t.* 57. Trifolium psoraloides, *Walt. Car. p.* 184.

β, gracilis: stem very slender; nearly glabrous; leaflets thin, ovate-oblong, dotted, glabrous above, the lower surface and margin slightly hairy.—P. gracilis, *Chapman! mss.*

Dry soils, Southern States! *β.* Pine woods, Middle Florida, *Dr. Chapman!* May–June.—Stem branched, 2 feet high. Leaflets about 2 inches long. Stipules lanceolate. Peduncles 3–4 times as long as the leaves. Flowers 3 lines long, usually in pairs, on short pedicels. Calyx and bracts conspicuously glandular, veined with purple.—The bracts in our specimens of *β.* have fallen off.

21. *P. eglandulosa* (Ell.): pubescent, nearly destitute of glands; leaves 3-foliolate; leaflets oblong-lanceolate; spikes oblong; bracts broadly lanceolate, conspicuously acuminate, and (as well as the calyx) villous; legume nearly orbicular, with strong transverse wrinkles. *Ell. sk.* 2. *p.* 198; *DC. prodr.* 2. *p.* 220. Melilotus psoraloides, *Nutt.! gen.* 2. *p.* 104, excl. syn.?

Dry soils, Virginia! to Florida! and west to Arkansas! May–June.—Scarcely distinct from the preceding.

22. *P. simplex* (Nutt.! mss.): grayish-pubescent, obscurely glandular, erect; stem simple; leaves 3-foliolate; leaflets lanceolate, acute, rugosely veined, mucronate; peduncles very long; spikes oblong, many-flowered; bracts linear-lanceolate, acuminate; teeth of the calyx oblong-triangular, the lowest one longest and acuminate; legumes nearly orbicular, with strong transverse wrinkles.

Plains of Red River, Arkansas, *Nuttall!* Texas, *Drummond!*—Root somewhat fusiform. Stems solitary or two from the same root, 1–3 feet high. Flowers larger than in P. melilotoides, bright purplish-blue. Calyx and petals strongly veined.

23. *P. rhombifolia*: sparingly pubescent; leaves 3-foliolate; leaflets rhombic-ovate, shorter than the petioles; peduncles longer than the leaves, at length recurved; spikes capitate, few-flowered; bracts ovate, acuminate; teeth of the calyx lanceolate, the lowest one longest.

Texas, *Drummond!*—Stem decumbent?, slender, angular. Leaflets ½–¾ of an inch long, dotted with scarcely visible glands. Petioles 1–2 inches long. Spikes 6–8-flowered. Flowers purplish, 5–6 lines long. Calyx hirsute; the teeth (except the lowest one) shorter than the tube. Vexillum obovate. Legume not seen.

24. *P. Onobrychis* (Nutt.): pubescent; leaves 3-foliulate; leaflets ovate, acuminate; racemes elongated, somewhat secund; calyx much shorter than the corolla, without glands; the teeth small, obtuse, equal; legume ovate,

muricate, wrinkled transversely.—*Nutt. gen.* 2. *p.* 104; *DC. prodr.* 2. *p.* 220. P. latifolia, *Torr.! in ann. lyc. New-York*, 2. *p.* 176.

Banks of rivers, Kentucky! and Illinois! to Missouri! June–July.—Stem 3–5 feet high. Leaves very large, resembling those of Desmodium bracteosum. Racemes 3–6 inches long. Flowers small, on short slender pedicels. Legume much compressed, black, roughened with conical tubercles and marked with oblique reticulated wrinkles. Seeds oblong, dark brown.—Very nearly allied to the two preceding species.

24. *P. physodes* (Dougl.): more or less pubescent; leaves pinnately 3-foliolate; leaflets broadly rhombic-ovate, acute, mucronate, obscurely glandular; racemes loose, longer than the leaves; calyx much inflated, hirsute; the teeth nearly equal, shorter than the tube.—*Hook. fl. Bor.-Am.* 2. *p.* 136.

β. nearly glabrous; stem roughened with slightly projecting glands; leaflets nearly orbicular; racemes scarcely as long as the leaves.

Banks of rivers, Oregon, *Douglas*, *Nuttall!* *β.* California, *Douglas!*—Plant about 1½ foot high. Leaflets 1¼ inch long and nearly one inch in diameter. Stipules lanceolate. Racemes 15–20-flowered. Calyx clothed with long blackish hairs, decidedly shorter than the corolla (scarcely shorter, *Hooker*). Corolla nearly white, the wings and keel tipped with purple. Legume elliptical, membranaceous, pubescent, entirely covered by the enlarged calyx.—According to Hooker the leaves are sometimes 5-foliolate, but Mr. Nuttall informs us that he found them invariably 3-foliolate. Hooker also describes the corolla as scarcely exceeding the calyx, whereas we find it to be nearly twice as long; so that his plant is perhaps a distinct, but nearly allied species to ours.

25. *P. orbicularis* (Lindl.): pubescent, the hairs mixed with small clavate truncate glands; stem prostrate and creeping; leaves 3-foliolate, on very long petioles; leaflets roundish-oval; peduncles as long as the leaves; spikes capitate; bracts (oblong) and calyx very hirsute; lowest tooth of the calyx much the longest. *Lindl. bot. reg. t.* 1971.

California, *Douglas*. June–July.—Stem long, tough and slender: glands dark, resembling tacks. Petioles about 6 inches long. Spikes globose-ovate. Flowers bright purplish red. *Lindl.*

26. *P. macrostachya* (DC.): whole plant pubescent; stem erect; leaves 3-foliolate; leaflets ovate, mucronate; petioles glandularly scabrous; peduncles 4 times as long as the leaves; spikes cylindrical-oblong; the rachis, bracts, and calyx very hirsute; lowest tooth of the calyx nearly as long as the corolla.—*DC. prodr.* 2. *p.* 220; *Lindl. bot. reg. t.* 1769; *Hook fl. Bor.-Am.* 1. *p.* 136.

β.? tomentose-pubescent; stem and petioles covered with stipitate glands; leaflets rhombic-oval, slightly pubescent and dotted with glands above; stipules large, broadly ovate, acuminate; peduncles a little longer than the leaves; spikes oblong; bracts very broad and acuminate, as long as the flower; calyx hirsute, the lower tooth nearly as long as the corolla, the other teeth unequal.

California, *Douglas*. Nootka? *DC.* *β.* California, *Douglas!*—Stem about 3 feet high, branched. Spikes about 2 inches long. Stipules ovate, acuminate, small. Leaflets about 2 inches long; the rachis and ovate acuminate bracts clothed with blackish hairs. Flowers purple. Legume ovate, black, glabrous, with a short point. *Lindl.*—Our *β.* differs in several respects from the figure and description of Lindley here quoted, but these were taken from cultivated specimens.

* * * *Leaves pinnate.*

27. *P. multijuga* (Ell.): leaves pinnate; leaflets numerous (9–10 pairs), oblong-lanceolate, obtuse, pubescent; spikes oblong; bracts small, membranaceous, without glands. *Ell. sk.* 2. *p.* 198; *D. C. prodr.* 2. *p.* 220.

Abbeville, Georgia, *Elliott*. May–June.—Stem 1–2 feet high, thick, nearly glabrous. Leaflets small, dotted. Stipules broadly ovate, slightly ciliate. Bracts about half as long as the calyx. Teeth of the calyx very long, acute, villous on the margin. Corolla violet. Legume not seen, but from the appearance of the ovary 1-seeded. *Elliott.*

B. Corolla irregular, not properly papilionaceous: flowers in spikes or heads:

26. AMORPHA. *Linn.; Lam.; Gærtn. fr. t.* 144; *DC. prodr.* 2. *p.* 256.

Calyx obconical-campanulate, 5-toothed or 5-cleft, persistent. Vexillum concave, unguiculate, erect: wings and keel wanting. Style filiform. Stamens exserted, monadelphous at the base. Legume oblong, a little curved, or lunulate, longer than the calyx, roughened or tuberculate with glands, tardily dehiscent, 1–2-seeded. Seeds oblong-oval, or slightly reniform.—Shrubby or suffruticose plants (all North American). Leaves unequally pinnate: leaflets numerous, punctate with pellucid (at length mostly brownish) dots, usually stipellate. Stipules caducous. Racemes spiked, virgate, terminal, often aggregated or paniculate at the summit of the branches. Flowers much crowded, bluish-violet or nearly white: pedicels articulated with the flower.

1. *A. fruticosa* (Linn.): pubescent or nearly glabrous, shrubby or arborescent; leaflets oval or elliptical-oblong, petiolulate, the lowest pair not approximated to the stem; calyx somewhat pubescent; the teeth short, the lower one acuminate and a little longest, the others commonly obtuse; vexillum purple; legume about 2-seeded.—*Walt. Car. p.* 179; *Michx.! fl.* 2. *p.* 64; *Pursh, fl.* 2. *p.* 467; *Ell. sk.* 2. *p.* 188; *Bot. reg. t.* 427; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 139.

β. vexillum glandular on the outside.—A. glabra, *Desf.; DC. l. c.*

Along rivers, Pennsylvania to Florida! and Louisiana! west to the Rocky Mountains! Near Lake Winnipeg, *Douglas*, June.—Shrub 6–10 or 16 feet high, sometimes arborescent: young branches and leaves pubescent. Leaflets variable in size, sometimes slightly emarginate, sparsely pellucid-punctate. Spikes clustered. Calyx at length more glandular; the lateral teeth often acute. Vexillum deeply emarginate. Style hairy nearly the whole length.

2. *A. Caroliniana* (Croom): stem and leaves nearly glabrous; leaflets oblong or elliptical, petiolulate, dotted, the lowest pair approximated to the stem; flowers on very short pedicels; calyx villous on the margin; the teeth short, the two upper obtuse, the three lower longer and commonly equal, acuminate or subulate-aristate; vexillum dark blue.—*Croom! in Sill. jour.* 25, (1833) *p.* 74. A. cynostachya, *Curtis! in Bost. jour. nat. hist.* 1. *p.* 141.

Wilmington, N. Carolina, *Curtis!* Newbern, *Croom!* July.—Shrub 4–5 feet high. Leaflets smaller and more numerous than in A. fruticosa. Calyx subsessile, glandular. Style hairy below.—Intermediate between the preceding species and A. herbacea; resembling the latter in the leaves and very short pedicels. We find considerable diversity in the calyx-teeth, even in the same specimen. Commonly, perhaps, the 3 lower teeth are abruptly alternate into a subulate cusp, and the 2 upper very obtuse and short; but sometimes the middle one of the 3 lower teeth only is cuspidate, and again they are all short and acute. This and the succeeding species require a careful examination in the living state, or with more complete materials than we at present possess.

Linnaea, 24 [illegible]

[illegible]

3. *A. herbacea* (Walt.): small, shrubby, pubescent; leaflets elliptical, petiolulate, dotted, the lowest pair approximated to the stem; flowers subsessile; teeth of the calyx nearly equal, short, acute or acuminate; vexillum nearly white.—*Walt. Car. p.* 179; *Nutt. gen.* 2. *p.* 91; *DC. l. c.* A. pubescens, *Willd. Berl. baum.*, & *sp.* 3. *p.* 970; *Pursh, fl.* 2. *p.* 467; *Ell. sk.* 2. *p.* 189. A. pumila, *Michx.! fl.* 2. *p.* 64.

Pine forests, &c. N. Carolina to Georgia! and Florida. June–July.—"Shrubby rather than herbaceous" (*Ell.*), 2–4 feet high. Leaflets obtuse or acute, sometimes very small. Calyx purplish.

4. *A. nana* (Nutt.): shrubby, very low, nearly glabrous; leaflets somewhat ovate-elliptical, mucronulate; spikes solitary and aggregated; teeth of the calyx all setaceous-acuminate; legume 1-seeded. *Nutt.! in Fras. cat.*, & *gen.* 2. *p.* 91; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 139. A. microphylla, *Pursh! fl.* 2. *p.* 466.

On the woodless and grassy hills of the Missouri from the Platte to the mountains, *Nuttall!* (v. s. in herb. *Lamb.*) Plains of the Red River, British America, in lat. 50°, *Douglas.* May.—An exceedingly compact shrub, with copious foliage and very small rigid leaflets, punctate with rather large sparse pellucid dots. Calyx also glandular. *Hook.* Flowers purplish-blue and fragrant. *Nutt.*—The figure of A. nana in *Bot. mag. t.* 2112, is referred by Hooker to A. fruticosa.

5. *A. Californica* (Nutt.! mss.): "shrubby, pubescent; leaflets elliptical-oblong, obtuse, rather distant, conspicuously dotted with brownish glands beneath; petioles furnished with minute glandular scales; stipules broad and membranaceous; spike short and solitary; teeth of the villous calyx all acute and short; bracts lanceolate, acuminate.

"St. Barbara, California; near the coast. May.—Shrub rather lower than A. fruticosa. Leaves in the young state almost villous. Bracts and stipules brownish, caducous. The fully developed flowers not seen." *Nuttall.*

6. *A. lævigata* (Nutt. mss.): "glabrous and very smooth; leaves large; leaflets distant, elliptical-oblong, attenuated below; the common petiole short; stipules minute; bracts rather long and subulate, caducous; calyx very glandular; the teeth acute, the 3 lower ones longer and acuminate; vexillum deep blue, about the length of the calyx; legume 1-seeded.

"Banks of the Arkansas, near Salt River.—A very distinct large shrubby remarkably smooth species, with large distant and very obtuse leaflets, and long (8–10 inches) clustered terminal spikes. Calyx nearly glabrous except the margin, covered with elevated glands." *Nuttall.*—This species we have not seen. It is apparently allied to A. paniculata.

7. *A. paniculata:* whole plant canescently tomentose, except the upper surface of the leaves which is nearly glabrous and shining; leaves on distinct petioles; leaflets 7–8 pairs, elliptical-oblong (1½–3 inches long), petiolulate, very obtuse and often emarginate or retuse at each end, dotted and prominently veined beneath; spikes numerous, virgate, in a large nearly naked exserted branching panicle; flowers subsessile; teeth of the glandular and tomentose calyx unequal; the 2 upper triangular-ovate and shorter; the 3 lower triangular-subulate, the middle one somewhat longest; vexillum (purple) broadly cuneiform, truncate, one-third longer than the calyx.

Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*—Stem stout and apparently tall. Leaves 8 inches to a foot or more in length. Stipules not seen. Panicle often a foot or more long, compound. Spikes 6 inches in length, the flowers much crowded: bracts setaceous, caducous.

8. *A. canescens* (Nutt.): suffruticose, rather low, softly canescent; leaves sessile, very numerous and crowded; leaflets 15–24 pairs, closely approximated, elliptical or ovate-elliptical (very small), mucronate, at length rather rigid

and almost glabrous on the upper surface; spikes aggregated in a terminal subsessile panicle; flowers nearly sessile; teeth of the calyx rather long, ovate-lanceolate, equal; vexillum subcuneiform-orbicular or somewhat obcordate, bright blue; legume scarcely twice the length of the calyx, 1-seeded. —*Nutt.! in Fras. cat., & gen.* 2. *p.* 92; *DC. prodr.* 2. *p.* 256; *Pursh! fl.* 2. *p.* 467; *Hook. fl. Bor.-Am.* 1. *p.* 139.

Dry prairies and sandy places, from Red River, British America, *Douglas;* and St. Croix River, *Dr. Houghton!* to Louisiana! and Texas! west to the Rocky Mountains. Near Augusta, Georgia, *Dr. Leavenworth!* July-Aug.—Plant 1–3 feet high. Leaflets usually less than half an inch in length, somewhat pellucid-punctate; the dots reddish-brown when old. Spikes rather short and dense: flowers showy.—*Lead-plant.* Supposed to indicate the presence of Lead-ore.

27. DALEA. *Linn.; Michx.! fl.* 2. *p.* 56; *DC. prodr.* 2. *p.* 244.

Calyx often glandular, 5-cleft or 5-toothed; the segments nearly equal. Petals unguiculate; the claws of the wings and keel united with the stamen-tube to the middle, deciduous by an articulation: vexillum free, inserted at the bottom of the calyx; the limb cordate. Stamens 10 (rarely 9), monadelphous; the tube cleft. Ovary with 2 collateral ovules.* Legume membranaceous, enclosed in the calyx, indehiscent, 1-seeded.—Herbaceous or somewhat shrubby plants, dotted with glands. Leaves unequally pinnate (rarely trifoliolate), exstipellate. Stipules minute, setaceous. Spikes pedunculate, terminal or opposite the leaves, dense, often capitate, rarely loosely-flowered.

1. *D. laxiflora* (Pursh): glabrous; stem branched above (tall), erect; leaflets 4–5 pairs, linear-oblong; spikes panicled, interrupted, few- (10–15-) flowered, the flowers distant; bracts very broad, embracing the flower, coriaceous, glabrous; calyx with long setaceous plumose teeth; stamens 9.—*Pursh! fl.* 2. *p.* 741; *Nutt. gen.* 2. *p.* 101; *DC. prodr.* 2. *p.* 244. Cylopogon virgatum, *Raf. in jour. phys. Aug.* 1819, *p.* 97.

Hills and prairies of the Missouri, and Mississippi, *Bradbury! Nuttall!* On the Platte, *Dr. James!* Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*— ♃ Stem with numerous slender somewhat spreading branches, 3–4 feet high. Leaflets 2–3 lines long, and about half a line wide, strongly dotted. Racemes 2–3 inches long. Bracts almost orbicular, glandular, slightly cuspidate. Calyx deeply cleft, beautifully plumose. Corolla white: keel twice as long as the wings: vexillum cordate, very small, sometimes with 4 approximated glands near the middle.—In our Texan specimens the segments of the calyx are remotely denticulate, a character which we have not observed in the plant from other localities.

2. *D. lanuginosa* (Nutt.! mss.): decumbent, canescently tomentose; leaflets 4–6 pairs, obovate-cuneate, emarginate; glands few, large; spikes elongated, rather loose; bracts ovate, with a long acumination; teeth of the calyx plumose, subulate, dilated at the base, as long as the tube.

Gravelly banks and islands of the Arkansas, near Fort Smith, *Nuttall!* On the Platte, *Dr. James!*—♃ Whole plant clothed with a soft almost woolly pubescence; the branches prostrate and spreading widely in a circular manner. Leaflets 5–6 lines long and about 2 lines wide. Spikes usually opposite the leaves, 2–3 inches in length, on moderately long peduncles, many- (30–50-) flowered; the lower flowers somewhat remote. Petals deep purple: wings and keel oval, nearly equal: vexillum broadly cordate, a little longer than the other petals. Stamens 10.

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* This is also the case in Onobrychis.

3. *D. formosa* (Torr): suffruticose, much branched, glabrous; leaflets very small, about 5 pairs, cuneate-oblong, retuse, dotted with black glands beneath; spikes loose, few-flowered, on short peduncles; bracts ovate, shorter than the flower, silky-villous on the margin; teeth of the calyx subulate, plumose. *Torr.! in ann. lyc. New-York*, 2. *p.* 178.

On the Platte, *Dr. James!*—Leaflets thick, about 2 lines long, very narrow. Spikes 6–10-flowered. Flowers large and showy, bright purple. Calyx dotted. Vexillum cordate, shorter than the keel.—Allied to D. tuberculosa, *Lagas.*

4. *D. aurea* (Nutt.): stem pubescent, erect; leaflets 3–4 pairs, oblong-obovate and linear-oblong, more or less silky-pubescent; spikes ovate, very compact, on long peduncles; bracts rhombic-obovate, as long as the calyx; teeth of the calyx subulate, broad at the base, plumose.—*Nutt.! gen.* 2. *p.* 101; *Pursh! fl.* 2. *p.* 741; *DC. prodr.* 2. *p.* 244. Cylopogon capitatum, *Raf.! l. c.* Petalostemon capitatum, *DC. l. c.*

Gravelly hills, near White River, Missouri, *Nuttall*, *Bradbury!* On the Platte, *Dr. James!* Prairies of Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*—♃ Stem about 2 feet high. Leaves remote: leaflets 4–6 lines long, when young almost villous beneath, nearly glabrous above, and of a grass-green colour when dry, often very sparingly dotted. Spikes 1–2 inches long, very thick. Calyx deeply cleft. Corolla yellow: vexillum small, shorter than the oblong wings and keel-petals.

5. *D. alopecuroides* (Willd.): glabrous, erect, much branched; leaflets 10–14 pairs, linear-elliptical, obtuse or retuse, conspicuously dotted beneath; spikes cylindrical or oblong, silky-villous; bracts as long as the calyx; segments of the calyx lanceolate, acuminate, shorter than the tube.—*Willd. sp.* 3. *p.* 1336; *Pursh! fl.* 2. *p.* 474; *Nutt. gen.* 2. *p.* 101; *DC. prodr.* 2. *p.* 244. D. Cliffortiana, *Willd. l. c.; Pursh, l. c.; Ell. sk.* 2. *p.* 195. D. Linnæi, *Michx.! fl.* 2. *p.* 57, *t.* 38. D. pedunculata, *Pursh, l. c.?* Petalostemum alopecuroideum, *Pursh, l. c.*

Alluvial soils along the Mississippi and Missouri, *Nuttall!* Prairies of Illinois, *Short!* In Carolina, *Pursh.*— ① Stem 1–2 feet high, branched. Leaves numerous: leaflets about 3 lines long, pale green. Spikes 1–2 inches long, on short peduncles. Calyx thickly clothed with silky hairs.—We have never received this plant from the Southern Atlantic States. There are, however specimens of Enslen in Lambert's herbarium (perhaps collected in Georgia), which are labelled *D. alopecuroides;* but the spikes are only 6–8-flowered, and on very long peduncles.

§ *Leaves palmately trifoliolate, not dotted with glands.*

6. *D. Jamesii:* whole plant silky; leaves trifoliolate; leaflets obovate, very obtuse; stipules spiny; spikes oblong, sessile; calyx deeply cleft; segments setaceous, plumose; longer than the vexillum; keel longer than the wings.—Psoralea Jamesii, *Torr.! in ann. lyc. New-York*, 2. *p.* 175.

Sandy plains of the Canadian, *Dr. James!*—Stems several from one root about 4 inches high, somewhat woody at the base. Petioles about half an inch long. Leaflets as long as the petiole. Spikes dense and broad, about one inch long. Bracts ovate, acuminate, longer than the calyx. Keel and wings purple, oblong: vexillum yellowish?—We have detected no glands in this singular species, which has, with trifoliolate leaves, wholly the flowers of Dalea.

28. PETALOSTEMON. *Michx. fl.* 2. *p.* 48, *t.* 37; *DC. prodr.* 2. *p.* 243.

Calyx often glandular, 5-toothed (rarely 5-cleft), sometimes a little curved; the teeth connivent, nearly equal. Petals 5, on filiform claws: four of them nearly similar, their claws united to the stamen-tube quite to the summit (alternate with the stamens), and deciduous by an articulation; the fifth petal (vexillum) free, inserted at the bottom of the calyx; the limb cordate or oblong, conduplicate. Stamens 5, monadelphous; the tube cleft. Ovary with 2 collateral ovules. Legume membranaceous, enclosed in the calyx, indehiscent, 1-seeded.—Herbaceous, mostly perennial plants, dotted with glands. Leaves unequally pinnate, exstipellate. Stipules minute, setaceous. Flowers in pedunculate dense terminal spikes or heads.

1. *P. candidum* (Michx.): glabrous; stem firm and erect; spikes cylindrical, on long peduncles; bracts aristate, longer than the flowers; leaflets 3–4 pairs, lanceolate, sparingly dotted beneath; calyx nearly glabrous; petals* ovate; vexillum broadly cordate.—*Michx.! fl.* 2. *p.* 49, *t.* 37, *f.* 1; *DC. prodr.* 2. *p.* 243; *Hook.! fl. Bor.-Am.* 1. *p.* 137. Dalea candida, *Willd. sp.* 3. *p.* 1337.
Dry prairies, Western and South Western States! north to the Saskatchawan River! August.—Sparingly branched. Leaves an inch or more in length, 2–3 lines wide. Spikes much elongated after flowering. Teeth of the calyx shorter than the tube, ovate, somewhat pubescent on the margin, with 2 glands near the base of each. Petals white. Ovary pubescent.

2. *P. gracile* (Nutt.): glabrous; stem slender, decumbent or assurgent; spikes oblong-cylindrical, short; bracts acute, as long as the calyx; leaflets 3 pairs, linear-elliptical, slightly dotted beneath; petals ovate; vexillum broadly cordate.—*Nutt.! in jour. acad. Philad.* 7. *p.* 92. [illegible]
Lower part of Alabama, and in Florida, *Nuttall! Dr. Gates!* Texas, *Drummond!*—① Stem 1–2 feet long. Leaflets scarcely half an inch in length, in the uppermost leaves often solitary. Spikes shorter than in the preceding species, but the flowers nearly the same. Petals white.

3. *P. multiflorum* (Nutt.): glabrous; stem erect, branches fastigiate; spikes roundish-oblong; calyx with the tube glabrous; the teeth short, pubescent on the margin; petals ovate; leaflets 4–6 pairs, linear-oblong, with black dots on both surfaces.—*Nutt.! in jour. acad. Philad.* 7. *p.* 92.
Prairies of Arkansas, particularly on the Red River, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!*—About 2 feet high, much branched. Leaflets 4–6 lines long. Spikes scarcely half an inch long. Petals white, rounded or slightly cordate at the base.—Our Texan specimens differ from the Arkansas plant in the smaller leaflets, but not essentially in the flowers.

4. *P. macrostachyum* (Torr.): glabrous; stem dotted; leaflets 2–3 pairs, lanceolate-oblong, obtuse, dotted beneath; spike cylindrical, elongated; bracts lanceolate; calyx silky-villous, the teeth lanceolate; vexillum cordate.—*Torr.! in ann. lyc. New-York*, 2. *p.* 176. P. ornatum, *Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 138.
About the Forks of the Platte, *Dr. James!* Prairies on Lewis's River, Oregon, *Douglas!* (v. s. in herb. *Hook.*)—①? Stem 1–2 feet high, branched. Leaflets about ¾ of an inch long, the upper surface becoming of a deep verdigris-green in drying. Spikes when old more than 6 inches long; the

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* In describing the species of this genus, we call petals the 4 which alternate with the stamens: the 5th petal being the vexillum.

rachis villous. Bracts as long as the flower. Petals linear-oblong, narrowed at the base and nearly sessile, white.

5. *P. villosum* (Nutt.): stem tomentose, decumbent; leaves silky-villous; leaflets 6–7 pairs, lanceolate-oblong, rather acute, mucronate; spikes cylindrical, on short peduncles; calyx villous; the teeth semi-ovate, shorter than the tube; petals oblong-obovate; vexillum oblong.—*Nutt.! gen.* 2. *p.* 85; *Torr.! in Sill. jour.* 4. *p.* 66; *DC. prodr.* 2. *p.* 243.

Sandy banks of the upper part of the Missouri, *Nuttall, Dr. James!* Upper Mississippi, *Maj. Douglas!*—August.— ♃ Root fusiform, thick and reddish. Stems several from one root. Leaflets 3–4 lines long, slightly dotted, but the glands concealed by the dense pubescence. Spikes 1–2 inches long. Bracts lanceolate, acuminate, longer than the flower. Corolla rose-color.—The whole plant turns yellowish in drying.

6. *P. griseum:* grayish pubescent; stem nearly erect; leaflets 5–6 pairs, lanceolate-oblong and linear-oblong, acute, mucronate, thickly and conspicuously dotted beneath; spikes cylindrical, on shortish peduncles; calyx densely silky-villous, somewhat glandular, rather shorter than the bracts; the teeth semi-ovate, shorter than the tube; petals ovate; vexillum cordate.

Pine woods near the Sabine River, *Dr. Leavenworth!* Texas, *Drummond!*—Plant 2–3 feet high, terete, of a reddish color, usually branched in a paniculate manner either near the summit or from the middle upward. Leaflets 5–6 lines long, rather thinly pubescent on both surfaces with soft appressed hairs. Spikes about 2 inches long. Bracts subulate, as long as the flowers. Corolla pale rose-color. Petals scarcely acute at the base, as long as the vexillum.—The dried plant is of a dull grayish-green color. Nearly allied to the preceding species, but readily distinguished by its much less dense pubescence and conspicuously dotted leaves.

7. *P. phleoides:* stem pubescent; leaflets (particularly the margins) and petioles hairy; leaflets 6–8 pairs, linear-oblong, conspicuously dotted beneath; spikes cylindrical, on long peduncles; bracts awned, longer than the calyx, hairy; calyx glabrous, hairy on the margin, naked with large glands, cleft or obliquely truncated at the upper side; the teeth very short approximated to the lower side; petals lanceolate-linear; vexillum broadly cordate.

β. microphyllum: leaves very numerous; leaflets 14–18 pairs, nearly linear, very small; calyx hairy.

Arkansas, *Dr. Leavenworth!* *β.* Texas, *Drummond!*—① About 2 feet high, simple (*β.* branched at the summit). Spikes about 2 inches long. Leaflets 4–5 lines long (in *β.* 2–3 lines long, closely approximated). Calyx marked with large resinous glands. Petals extremely narrow, acute at the base, white: claw of the vexillum passing through the deep notch of the calyx.

8. *P. obovatum:* very tomentose (without glands?); stem erect or ascending; leaflets 4 pairs, obovate, obtuse, silky-lanuginous beneath; spike subsessile, ovate, very thick; bracts ovate, acuminate, larger than the calyx, both densely villous; teeth of the calyx subulate, as long as the tube; vexillum ovate, subcordate.

Texas, *Drummond!*—Whole plant almost woolly with soft grayish hairs. Stem thick. Leaflets rather remote, more than half an inch long, 3–4 lines wide. Bracts almost concealing the flowers, concave with a long acuminate point. Vexillum (pale purple?) with the claw as long as the limb; the other petals not seen.—Remarkable for its large and broad leaflets, and very thick subsessile spike.

9. *P. violaceum* (Michx.): somewhat pubescent or glabrous; leaflets 2 pairs, linear, with a few glands beneath; spikes very dense, varying from globose-ovate to oblong-cylindrical, pedunculate; calyx silky-canescent; teeth

about one-third the length of the tube; petals oblong, obtuse at the base, with short claws; vexillum cordate.—*Michx.! fl.* 2. *p.* 50, *t.* 37, *f.* 2; *Nutt. gen.* 2. *p.* 85; *DC. prodr.* 2. *p.* 243; *Hook. fl. Bor.-Am.* 1. *p.* 138. Dalea violacea, *Willd. sp.* 3. *p.* 1337. D. purpurea, *Vent. hort. Cels. t.* 40, fide *DC.*

Dry prairies, Western and South Western States! and Texas! North to Saskatchawan River. July–Aug.—♃ Root thick, somewhat fusiform, fasciculately branched below. Stems numerous from one root, about 2 feet high. Leaves fascicled: leaflets 6–10 lines long. Bracts obovate-spatulate, rather shorter than the calyx, acuminate, the points nearly glabrous. Flowers bright purplish-violet, retaining their color when dry.

10. *P. carneum* (Michx.): glabrous; leaflets 2–3 pairs, lanceolate-linear, glandular; spikes oblong, pedunculate; calyx glabrous, without glands, rather shorter than the obovate bracts, the teeth much shorter than the tube; petals (rose color) oblong, attenuate at the base into a long claw; vexillum oblong. —*Michx.! fl.* 2. *p.* 49; *DC. prodr.* 2. *p.* 243. P. roseum, *Nutt. in Sill. jour.* 5. *p.* 298; *DC. l. c.*

β. albidum: corolla white.—P. carneum, *Ell. sk.* 2. *p.* 176.

Sandy soils, Georgia, and Middle Florida, *Michaux! Dr. Chapman!* β. near Milledgeville, Georgia, *Dr. Boykin!* Aug.—♃ Stem slender, 1–2 feet high, much branched. Leaves fascicled: leaflets usually 3 pairs, about half an inch long, acute. Spikes an inch or more in length, on long peduncles. Calyx slightly pubescent on the margin, cleft on the upper side, the teeth scarcely one-third the length of the tube. Petals pale (or sometimes rather deep) rose-color; in β. pure white.—With the exception of the white flowers and rather narrower petals in β., we can find no character to distinguish it from the ordinary form.

11. *P. decumbens* (Nutt.): sparingly pubescent; stem branched from the base, decumbent; spikes ovate-oblong, thick; leaflets 3–4 pairs, linear-oblong, mucronate, slightly dotted; calyx shorter than the acuminate bracts; the teeth lanceolate, longer than the tube; petals linear-oblong, obtuse at the base; claws short; vexillum cordate.—*Nutt.! in jour. acad. Philad.* 7. *p.* 93.

Plains of Red River, Arkansas, *Nuttall!*—♃ Stem about a foot long. Leaflets 6–8 lines long and 2 lines wide. Spikes one inch long and about ¾ of an inch in diameter. Calyx a little pubescent, particularly on the margins of the teeth. Corolla deep violet-purple.—Near P. violaceum; but with larger and more numerous leaflets, a deeper-cleft calyx, narrower petals, &c. The upper surface of the leaves turns to a verdigris-green in drying.

12. *P. emarginatum:* glabrous; leaflets 7–8 pairs, cuneiform, emarginate, dotted beneath; spikes cylindrical, on very long peduncles; bracts broadly obovate, acuminate, longer than the flowers; calyx very villous, deeply 5-cleft, the segments lanceolate; petals oblong, rather obtuse at the base; vexillum oblong, emarginate.

Texas, *Drummond!*—① Stem about 2 feet high. Leaves numerous: leaflets one-third of an inch long, deeply emarginate. Spikes compact, on peduncles 6–10 inches long. Bracts silky-villous; lower ones much dilated. Flowers bright rose-purple. Petals with short claws. Limb of the vexillum (when expanded) somewhat 4-sided.—A very distinct species, having much the appearance of Dalea alopecuroides. The leaves become verdigris-green when dry.

13. *P. corymbosum* (Michx.): stem corymbosely branched at the summit; spikes globose; bracts large and much dilated, the lowest ones empty and bearing leaflets; leaves fascicled; leaflets 2–3 pairs, linear; calyx deeply cleft; the segments setaceous, plumose.—*Michx.! fl.* 2. *p.* 50; *Pursh, fl.* 2. *p.* 461; *Ell. sk.* 2. *p.* 176; *DC. prodr.* 2. *p.* 244, excl. syn. *Raf.* Dalea Kuhnistera, *Willd. sp.* 3. *p.* 1337. Kuhnistera Caroliniensis, *Lam. dict.* 3. *p.* 370.

Dry sandy pine woods, North Carolina! to Florida! Alabama, *Dr. Gates!* Sept.–Oct.—♃ Stems several from one root, erect, simple below, much branched at the summit; the branchlets terminating in roundish compact heads nearly half an inch in diameter. Bracts nearly orbicular, ciliate, mucronate, the lowest ones bearing one or more pairs of leaflets resembling those of the stem. Leaflets almost filiform, dotted. Flowers white. Segments of the calyx 3–4 times as long as the tube. Petals oblong-lanceolate, attenuate at the base: vexillum oblong.—This species on account of its habit, its large involucrate bracts, deeply divided and plumose calyx, and narrow petals, has been separated as a distinct genus; but scarcely on sufficient grounds, for several other species have a similar calyx and very narrow petals, and in P. multiflorum the stem is somewhat corymbosely branched. There is no other species, however, with similar spikes.

TRIBE IV. TRIFOLIEÆ. *Bronn.*

Corolla papilionaceous. Stamens diadelphous (9 & 1). Legume continuous, 1-celled, dehiscent and several-seeded, or 1–few-seeded and nearly indehiscent. Radicle inflexed.—Erect or procumbent, mostly low herbs, rarely a little shrubby. Leaves palmately or pinnately trifoliolate, or sometimes 5–7-foliolate, exstipellate: leaflets often toothed or serrulate! Inflorescence axillary or terminal, racemose, spicate, capitate, or umbellate.

29. TRIFOLIUM. *Tourn. inst. t.* 228; *Linn.* (partly); *DC. prodr. l. c.*

Calyx tubular or campanulate (not glandular), persistent, 5-cleft; the segments subulate or setaceous. Corolla commonly marcescent or persistent; the petals usually all more or less united at the base, free from (or occasionally coherent with) the stamen-tube: vexillum longer than the wings, and these mostly longer than the keel. Ovary 2–6-ovuled: style filiform. Legumes small, membranaceous, 1–2- or sometimes 3–6-seeded, indehiscent, or often dehiscent by the ventral suture, included in the calyx-tube or more or less exserted; rarely coriaceous and stipitate.—Herbs, often cæspitose or diffuse. Leaves palmately 3- (rarely 5–7-) foliolate, or occasionally pinnately trifoliolate: leaflets commonly denticulate; the veins straight, simple or forked, but scarcely reticulated (except in § Involucrarium). Stipules adnate to the base of the petiole. Flowers axillary or terminal, densely spicate, capitate, or subumbellate, bracteate: petals purple, red, white, ochroleucous, or yellow.—*Clover. Trefoil.*

§ 1. *Heads or spikes not involucrate.*—TRIFOLIUM proper.

* *Corolla marcescent or deciduous, never yellow: flowers in pedunculate or sessile spikes or ovate heads, not deflexed when old: calyx not inflated after flowering.*

1. *T. altissimum* (Dougl.): glabrous; stem erect, tall; leaflets linear-lanceolate, denticulate, on very long petioles, the uppermost nearly sessile; stipules lanceolate, acuminate, adnate to the petiole nearly their whole length; heads of flowers oblong, ebracteate, pedunculate; calyx wholly glabrous, the

4 upper teeth somewhat spirally incurved or tortuous. *Hook. fl. Bor.-Am.* 1. *p.* 130, *t.* 48.

Oregon, between the Spokan River and Kettle Falls, *Douglas.* Abundant also on Grand Ronde Prairie, east of the Blue Mountains. *Nuttall.* June–Aug.— ♃ Flowers rather large, red. Calyx-tube campanulate, a little inflated. Legume 1–2-seeded. *Hook.*

2. *T. plumosum* (Dougl.): silky-pubescent; stem erect, tall; leaflets linear-lanceolate, acuminate, denticulate, on very long petioles, the uppermost subsessile; stipules linear-lanceolate, acuminate, adnate above the middle to the petiole; heads of flowers conical-oblong, pedunculate, ebracteate; calyx very hairy; the teeth linear, straight, silky-plumose, longer than the tube of the corolla; ovary 4-ovuled. *Hook. fl. Bor.-Am.* 1. *p.* 130, *t.* 49.

Blue Mountains, Oregon; in alluvial soil, *Douglas, Nuttall.* June–July.— ♃ Leaflets very acute. Stipules large; the upper ones broader and shorter. Spikes about 3 inches long. Flowers white, at length somewhat spreading. *Hook.*

3. *T. eriocephalum* (Nutt.! mss.): "softly pilose or villous, stem erect; leaves all on long petioles; leaflets lanceolate or oblong-lanceolate, acutely and minutely serrulate; stipules linear-lanceolate, acuminate; heads subglobose, pedunculate, the flowers at length reflexed; calyx very hairy, divided nearly to the base; the teeth filiform, two-thirds the length of the corolla, plumose.

"Prairies of the Wahlamet, and near Fort Vancouver; not uncommon. May.— ♃ Root somewhat fusiform and branching, tuberous, blackish. Stem nearly simple, about a span high. Heads about an inch in diameter. Flowers ochroleucous: petals and stamens united. Legume 1-seeded." *Nuttall.*—Nearly allied to T. plumosum.

4. *T. arvense* (Linn.): somewhat silky-pubescent; stem erect, branching; leaflets spatulate-lanceolate, obtuse, minutely 3-toothed at the apex, entire or obscurely serrulate, longer than the petiole; stipules ovate, setaceously acuminate; spikes oblong-cylindrical, very villous, more or less pedunculate or subsessile; teeth of the calyx setaceous, longer than the corolla, at length spreading; petals scarcely connected.—*Eng. bot. t.* 944; *Michx.! fl.* 2. *p.* 59; *Ell. sk.* 2. *p.* 202; *DC. prodr.* 2. *p.* 190; *Hook. l. c.; Darlingt. fl. Cest. p.* 406.

Old fields, &c. Canada! to Florida! Introduced? June–Aug.— ① Plant 8–12 inches high. Spikes at length tawny. Corolla whitish, with a purple spot on the wings. Legume 1-seeded.—The spikes are at first nearly sessile and as it were bracteate at the base; but when old the peduncles are frequently as long as the spikes.—*Stone-Clover. Rabbit-Foot.*

5. *T. albopurpureum*: decumbent or assurgent, villous-pubescent; leaves all on long petioles; leaflets narrowly cuneiform, truncate or emarginate, denticulate; stipules ovate-lanceolate, subulate-acuminate; spikes ovate, very villous, at length on slender peduncles; teeth of the calyx setaceous, somewhat spreading, rather longer than the corolla; petals scarcely connected.

California, *Douglas!*— ① Stems filiform, somewhat branched, about 6 inches long. Leaflets about half an inch in length. Flowers a little larger than in T. arvense, whitish and purple: vexillum oblong. Legume 1-seeded.

6. *T. pratense* (Linn.): stems ascending, a little hairy; leaflets obcordate or oblong-ovate, and often emarginate, nearly entire; stipules broadly lanceolate, membranaceous, nerved, setaceously acuminate; heads of flowers ovate, dense, nearly sessile, bracteate; teeth of the calyx setaceous, hairy, the lower one much longer than the other 4, which are equal and about half the length

of the corolla.—*Pursh, fl.* 2. *p.* 478; *Eng. bot. t.* 1170; *Ell. sk.* 2. *p.* 202; *DC. l. c.; Bigel. fl. Bost. p.* 271; *Hook. fl. Bor.-Am.* 1. *p.* 191; *Darlingt. fl. Cest. p.* 406.

Meadows and cultivated fields, Canada! to Florida. Also Oregon, *Dr. Scouler*, *Douglas*. Introduced from Europe.—② or ♃ Leaflets glabrous above, often marked with a pale lunulate spot. Flowers purplish-red: petals all united into a tube at the base.—*Common Clover. Red Clover.*

7. *T. medium* (Linn.): almost glabrous; stem nearly erect, flexuous, branching; leaflets oblong or elliptical, nearly entire; stipules lanceolate, acuminate; heads of flowers subglobose, rather loose, solitary, more or less pedunculate, sometimes bracteate; teeth of the calyx setaceous, somewhat hairy; the lower one longest, shorter than the tube of the corolla.—*Eng. bot. t.* 190; *DC. prodr.* 2. *p.* 195. T. flexuosum, *Jacq. fl. Austr. t.* 386, ex *Seringe.*

Meadows, Essex county, Massachusetts, *Mr. Oakes!* Introduced.—♃ Heads larger than in the preceding species; the flowers of a deeper purple tint. Leaves without spots.

8. *T. longipes* (Nutt.! mss.): "somewhat pubescent; stem erect or ascending, simple; leaves on slender petioles; leaflets linear-lanceolate, serrulate, silky-pubescent beneath; stipules semi-lanceolate, acuminate, foliaceous; heads roundish-ovate, ebracteate, on very long peduncles; segments of the calyx setaceous, much longer than the tube, somewhat equal; petals lanceolate; ovary 5-ovuled.

"Valleys of the central chain of the Rocky Mountain range, and on the moist plains of the Oregon as low as the Wahlamet; forming extensive fields of herbage. May–July.— ♃ Root creeping. Stem 2–3 inches to a foot high. Lower petioles 3–4 inches long in tall specimens; upper ones about an inch in length: leaflets of the lower leaves elliptical. Peduncles 2–8 inches long: heads nearly an inch in diameter. Flowers ochroleucous: petals almost acuminate; the keel and wings united with the stamen-tube; vexillum free." *Nuttall.*

9. *T. Andinum* (Nutt.! mss): "cæspitose, silky-canescent; caudex short and thick, branched above; leaves mostly radical; leaflets cuneate-oblong, apiculate; stipules broadly ovate, membranaceous; heads of flowers hemispherical, solitary, on short scapes, bracteate at the base, with 2 sessile sheathing leaves; calyx densely villous; teeth subulate, shorter than the tube; ovary 3–4-ovuled; legume 1-seeded.

"Summit of dry rocky hills in the central chain of the Rocky Mountain range. May–June.— ♃ Plant in dense clusters, scarcely rising two inches above the surface; the caudex chiefly subterranean. Petioles half an inch to an inch in length; leaflets rigid, slightly serrulate towards the extremity, 3–5 lines long. Heads half an inch in diameter, with roundish scarious bracts at the base, subtended by a pair of opposite bracteal leaves; the large membranaceous stipules of which bear a sessile trifoliolate lamina, similar to the other leaflets of the plant. Flowers rather small, ochroleucous [persistent and turning brown?], rather small: vexillum free." *Nuttall.*—A curious truly alpine species, perhaps not properly referred to this section of the genus.

** *Corolla persistent, never yellow, usually becoming scarious or rather coriaceous and turning brownish when old; flowers in globose heads or umbels (rarely few), deflexed when old: calyx not inflated after flowering.*

10. *T. nanum* (Torr.): glabrous, cæspitose; caudex very short, branching above; leaflets 3, obovate-oblong, somewhat acuminate, denticulate, strongly veined, on rather long petioles; stipules membranaceous, ovate, cuspidate; peduncles very short, radical, umbellately about 3-flowered; flowers large;

calyx tubular-campanulate, glabrous; the teeth nearly equal, triangular-subulate, shorter than the tube; vexillum broadly obovate, three times the length of the calyx; legume 4–5-seeded.—*Torr.! in ann. lyc. New-York*, 1. *p.* 35. *t.* 3, *f.* 4.

On James' Peak, Rocky Mountains, *Dr. James!*—♃ Plant 1–2 inches high. Leaflets nearly half an inch long. Flowers about ¾ of an inch in length, purple? Vexillum broadly obovate.—Nearly allied to T. uniflorum and T. eximium.

11. *T. dasyphyllum:* densely cæspitose; caudex short and thick, branching above; leaves, peduncles, and calyx canescently silky with brownish hairs; leaflets 3, lanceolate or oblong-lanceolate, acute or acuminate, entire; stipules membranaceous, lanceolate, subulate-acuminate; head globose, many-flowered, on a long radical peduncle; teeth of the calyx subulate-setaceous, nearly equal, longer than the tube and half as long as the corolla; legume 3–4-seeded.

Summit of the Rocky Mountains, *Dr. James!*—♃ Plant 3–4 inches high. Caudex mostly subterranean. Leaves on slender petioles, half the length of the peduncle. Head of flowers an inch in diameter: corolla purple; the vexillum ovate, covering the wings and the keel.

12. *T. megacephalum* (Nutt.): hairy; stem ascending; leaflets 5–7, oblong-cuneiform, mucronate, spinulose-denticulate; stipules large, foliaceous, ovate, spinulose-serrate; head of flowers (very large) ovate-globose; calyx with a very short tube; the teeth setaceous, very long, but shorter than the corolla; vexillum large, broad below and folded round the other petals; legume stipitate. *Hook.*—*Nutt. gen.* 2. *p.* 105; *DC. prodr.* 2. *p.* 204; *Hook. fl. Bor.-Am.* 1. *p.* 132. Lupinaster macrocephalus, *Pursh, fl.* 2. *p.* 479, *t.* 23.

Head-waters of the Missouri, *Lewis;* and on moist elevated ground near the sources of the Oregon, *Douglas.* April–May.—♃ About a foot high. Leaves on long petioles. Flowers nearly 2 inches long. Teeth of the calyx silky-plumose. Corolla ochroleucous; the keel purplish. Stamen-tube coalescent below with the wings and keel. Legume 2-seeded.

13. *T. reflexum* (Linn.): pubescent; stem ascending or decumbent; leaflets obovate or obovate-oblong, sometimes emarginate, crenulate-serrulate; stipules foliaceous, ovate-lanceolate, acuminate; heads of flowers subumbellate, dense; calyx hirsute, parted nearly to the base; the teeth subulate, half as long as the corolla; vexillum broadly ovate; legume 3–5 seeded.—*Michx.! fl.* 2. *p.* 59; *Pursh, fl.* 2. *p.* 447; *Ell. sk.* 2. *p.* 282; *DC. prodr.* 2. *p.* 201 (not of *Waldst. & Kit. & DC. l. c. p.* 197); *Hook. bot. mag. t.* 3471. T. Pennsylvanicum, *Willd.? ; DC. l. c.?*

Meadows, and alluvial soils, North Carolina! to Florida, & Western States! to Louisiana! and Texas! April–June.—①? Stem 12–18 inches high. Heads of flowers larger than in Red-Clover: peduncles about twice as long as the head. Flowers handsome: vexillum rose-red, wings and keel white.—*Buffalo Clover.*

14. *T. stoloniferum* (Muhl.): glabrous; stem creeping, with short axillary erect flowering branches; leaflets broadly obcordate, crenulate-denticulate; stipules membranaceous, ovate-lanceolate, acuminate, foliaceous; heads of flowers loose, umbellate; calyx nearly glabrous; the teeth twice as long as the tube, subulate, less than half the length of the corolla; legume 2- (rarely 3-) seeded.—*Muhl. cat. p.* 70; *Eaton, man. ed.* 7. *p.* 564; *Beck, bot. p.* 80.

Fields and open woods, Kentucky! Ohio, Missouri! &c. May–June.—♃ Stems 6–10 inches long, several from one root. Leaflets of the flowering branches 6–10 lines wide. Heads an inch or more in diameter. Flowers white: vexillum a little tinged with purple, obovate.—Allied to the preceding species.—*Running Buffalo Clover.*

15. *T. gracilentum:* nearly glabrous; stem slender, erect or ascending; middle leaves on very long filiform petioles; leaflets cuneate-obcordate, spinulose-serrulate; stipules rather foliaceous, the lower ones linear-lanceolate and setaceously acuminate, the uppermost ovate-lanceolate and shorter: heads loose, 15–25-flowered; calyx glabrous; the teeth lanceolate-subulate, setaceously acuminate, thrice the length of the tube and about one-third shorter than the corolla; legume 1-seeded.

California, *Douglas!*—① Stem 8–10 inches high. Petioles of the middle leaves 4 inches long; those of the lowermost and especially the uppermost leaves much shorter. Heads as large as in T. repens: flowers purple.

16. *T. repens* (Linn.): glabrous; stems creeping, diffuse; leaflets obcordate, sometimes rather ovate and emarginate, denticulate; stipules scarious, narrowly lanceolate; heads of flowers globose, subumbellate, on very long axillary peduncles; teeth of the calyx unequal, lanceolate-subulate, shorter than the tube; legume about 4-seeded.—*Eng. bot. t.* 1769; *Michx.! fl.* 2. *p.* 59; *Pursh, fl.* 2. *p.* 477; *Darlingt. fl. Cest. p.* 407.

Pastures and waste places, sometimes in woodlands; common throughout North America. April–Nov.—♃ Flowers white, sometimes purplish, withering and becoming pale dirty brown when old.—*White Clover.*

17. *T. amphianthum:* small; stems creeping, a little puberulent; leaflets (small) broadly obcordate, crenulate; stipules scarious, ovate, obtuse, or with a short abrupt point; heads rather few-flowered, on long filiform peduncles; teeth of the calyx lanceolate-subulate, as long as the tube; legume 3–4-seeded; the stoloniferous branches also bearing solitary fertile flowers in the axils of the leaves, on short recurved peduncles.

Texas, *Drummond!*—♃ Rooting stems throwing up leaves at intervals of about half an inch. Peduncles 2–3 times the length of the leaves: vexillum ovate. Radical flowers (subterranean?) perfect, ripening 2–3 seeds; the corolla and teeth of the calyx very short; style very short, recurved.

18. *T. Carolinianum* (Michx.): small, more or less pubescent; stems at first erect, at length diffuse or procumbent; leaflets cuneate-obcordate (the upper ones only emarginate), crenulate; stipules ovate, acuminate, foliaceous; heads few- (10–20-) flowered, depressed; calyx parted almost to the base; the teeth lanceolate, rather unequal, a little shorter than the corolla; vexillum roundish-ovate, with a short abrupt point, covering the wings and keel; legume 4 seeded.—*Michx.! fl.* 2. *p.* 58; *Ell. sk.* 2. *p.* 200; *DC. prodr.* 2. *p.* 201. T. umbellatum, *Seringe, in DC. l. c.* T. oxypetalum, *Fisch. & Meyer, ind. sem. St. Petersb.* (*Dec.* 1835) *p.* 51.

Sandy fields, S. Carolina! to Florida! west to Arkansas! and Texas! March–May.—① Plant 3–6 or 8 inches high, at first erect and simple, at length much branched from the base, and forming tufts. Calyx often purplish. Corolla white, tinged with purple.

* * * *Corolla yellow, turning to chestnut-brown when old, scarious and persistent: flowers in ovate heads, at length deflexed: calyx not inflated after flowering. (Leaves often pinnately trifoliolate.)*

19. *T. procumbens* (Linn.): stem procumbent or ascending, pubescent; leaves on short petioles; leaflets cuneate-obcordate, or cuneate-oblong and emarginate, denticulate, the lower pair distant from the terminal one; stipules rather foliaceous, ovate, ciliate, much shorter than the petioles; heads of flowers dense, on slender axillary peduncles; teeth of the calyx unequal, the two upper ones very short; vexillum striate when old; legume 1-seeded. —*Pursh, fl.* 2. *p.* 479; *DC. prodr.* 2. *p.* 205; *Bigel. fl. Bost. p.* 271; *Darlingt. fl. Cest. p.* 408. T. minimum, *Bart. prodr. fl. Philad.* 2. *p.* 74.

Sandy fields and roadsides, Massachusetts! to Virginia! Introduced from Europe. May–Sept.—① Flowers smaller than in T. agrarium.—The terminal leaflet is usually said to be petiolulate, but it is no more so than the lateral ones: the common petiole is prolonged beyond the lateral leaflets; so that the leaves are, in fact, pinnately trifoliolate, as are several species of this section. Seringe mentions a variety in which the leaves are sometimes pinnate.

20. *T. agrarium* (Linn.): stem ascending or erect, minutely pubescent; leaves on rather short petioles; leaflets cuneate-oblong or obovate-oblong, often emarginate, denticulate, all subsessile; stipules foliaceous, linear-lanceolate, cohering with the petiole for more than half its length; heads of flowers dense, on shortish peduncles terminating the branches, or sometimes axillary; teeth of the calyx unequal, the two upper ones shorter; vexillum striate when old; legume 1-seeded.—*Pursh, fl.* 2. *p.* 478; *DC. l. c.; Darlingt. fl. Cest. p.* 408.

Sandy fields and roadsides, Massachusetts! to Pennsylvania! Introduced from Europe. June–Aug.—① Stem 6–15 inches long, branching. Flowers, as in all the section, at length reflexed and imbricated downwards. Leaves palmately trifoliolate.—*Yellow Clover. Hop-Clover.*

§ 2. *Heads of flowers subtended by a monophyllous (usually many-cleft) involucre. (Legume often dehiscent at the ventral suture: veins of the leaves often reticulated.)*—INVOLUCRARIUM, Hook.

21. *T. microcephalum* (Pursh): pubescent or hairy, ascending or procumbent, branched; leaflets obcordate, or obovate-cuneiform and often emarginate, denticulate; stipules ovate, acuminate, nearly entire; heads subglobose (small), on long axillary peduncles; involucre many-cleft, the segments equal, entire; calyx hairy; the teeth equal, straight, subulate, broad at the base, as long as the tube, about the length of the corolla; legume indehiscent, 1-seeded.—*Pursh, fl.* 2. *p.* 478; *DC. prodr.* 2. *p.* 207; *Hook.! fl. Bor.-Am.* 1. *p.* 132. (excl. *β.*?)

Oregon, from the mountains to near the sea, *Lewis, Dr. Scouler! Nuttall!* California, *Menzies.*—Stem 6–12 inches or more long, slender. Heads about one-fourth of an inch in length. Segments of the involucre about 9. Legume turgid.

22. *T. variegatum* (Nutt.! mss.): "glabrous, decumbent, branching; leaflets obovate-oblong or somewhat obcordate, minutely spinulose-serrate; upper stipules roundish, laciniately dentate with subulate-setaceous teeth; peduncles axillary, longer than the leaves; involucre laciniately many-cleft, shorter than the subglobose head; teeth of the glabrous calyx equal, lanceolate-subulate, with setaceous points, much longer than the tube, shorter than the corolla; legume dehiscent, 1–2-seeded."—T. microcephalum *β.* glabrum, *Hook. l. c.*?

β. heads larger; peduncles twice the length of the leaves.

Springy places near the mouth of the Wahlamet, *Nuttall! β.* California, *Douglas!*—② Stem 8–12 inches long. Lower leaflets with a lunulate spot. Heads about half an inch in diameter. Corolla dull purple, whitish at the tip.

23. *T. fimbriatum* (Lindl.): prostrate, glabrous; leaflets oblong or slightly cuneate, spinulose-denticulate; stipules ovate, acuminate, laciniate-spinulose; involucre laciniately many-cleft, shorter than the subglobose heads; teeth of the calyx broadly subulate, straight, half the length of the corolla [legumes 2-seeded]. *Hook.*—*Lindl. bot. reg. t.* 1070; *Hook. fl. Bor.-Am.* 1. *p.* 133; *Hook. & Arn. bot. Beechey, p.* 137.

Common in salt marshes of the N. W. Coast from Cape Orford to California. *Menzies, Douglas, Dr. Scouler.* (v. s. in hort.)—Stems long and thick.

Leaflets an inch or more in length, conspicuously fringed with spinulose-setaceous teeth. Heads an inch in diameter. Teeth of the calyx shorter than the tube, unequal, spiny. Corolla slender, purple. Legume 2-seeded.—We have only examined cultivated specimens: in these the leaflets are almost lanceolate or oblanceolate.

24. *T. spinulosum* (Dougl.): prostrate, glabrous; leaflets oblong, acute at each end, spinulose-denticulate, terminated by a rigid spiny point; stipules ovate, acuminate, spinulose-serrate; involucre laciniately many-cleft, shorter than the subglobose heads; teeth of the calyx narrowly subulate, pungent, straight, a little shorter than the corolla (corolla white, the keel and wings tipped with fine purple).—*Hook. fl. Bor.-Am.* 1. *p.* 133.

β. triste: leaflets oblong-cuneiform; corolla dull purple.—T. triste, *Nutt.! mss.*

Oregon, "near springs, in mountain vallies, forming a dense short sward; the herbage preferred to everything else by deer and horses." *Douglas*, in *Hook.* *β.* St. Barbara, California, *Nuttall!*—Smaller and more slender than the preceding species. Teeth of the calyx 3 or 4 times the length of the tube, setaceous. Legume 2-seeded.

25. *T. heterodon:* decumbent, glabrous; leaflets oblong or oval, somewhat cuneiform at the base, mucronately ciliate-serrulate, obtuse, the lowermost mostly emarginate; stipules membranaceous, ovate, acuminate, laciniately serrate with subulate teeth, the lower ones lanceolate and often nearly entire; involucre laciniately many-cleft, much shorter than the (large) hemispherical head; teeth of the calyx narrowly subulate, nearly equal, longer than the tube, much shorter than the corolla; legume 3–6-seeded.

α. teeth of the calyx entire; the two upper ones united a little highest.—T. atropurpureum, *Nutt.! mss.*

β. lower teeth of the calyx setaceously 2–3-cleft. T. calocephalum, *Nutt.! mss.*

γ. teeth of the calyx usually all deeply and unequally 2–3-cleft; the segments setaceous.

Oregon and California. *α.* Borders of marshes near the mouth of the Oregon, *Nuttall! Dr. Scouler!* *β.* St. Barbara, *Douglas! Nuttall!* *γ.* California, *Douglas!* June.—♃ Stems several from one root, 10–18 inches long, simple or a little branching, usually producing only terminal heads. Leaflets ½–1 inch in length, very finely and sharply serrulate. Heads an inch, or a little more, in diameter, depressed, on slender peduncles. Flowers large, rather dark purple; the vexillum paler at the tip. Calyx-teeth a little spreading. Ovary somewhat stipitate.—We have long possessed specimens of this species collected by Dr. Scouler (as well as the various forms from Douglas's collection), but we do not find it described in Hooker's Flora.

26. *T. involucratum* (Willd.): nearly erect, glabrous; leaflets narrowly linear-lanceolate, mucronate, spinulosely serrulate; stipules membranaceous, oblong-ovate, aristate, the upper ones pectinately dentate with setaceous teeth, the lowermost narrower and nearly entire; involucre laciniately many-cleft, a little shorter than the rather loose subhemispherical heads; teeth of the calyx much shorter than the tube, subulate from a very broad base, pungent, entire or often 1-toothed at the base on each side, a little shorter than the corolla; legume dehiscent, 1–2-seeded.—*Willd. sp.* 3. *p.* 1372?; *Smith, in Rees, cycl.; Hook.! fl. Bor.-Am.* 1. *p.* 133, not of *Kunth, & DC.* T. Willdenovii, *Spreng. syst.* 3. *p.* 208? T. tridentatum, *Lindl. bot. reg. sub t.* 1070.

β. leaflets of the lower leaves linear, entire.

Dry gravelly soils, California, *Menzies, Douglas!* and from the mouth of the Oregon to the Rocky Mountains, *Douglas, Nuttall!*—① Plant slender, branching from the base, the divisions 10–18 inches high, slender, scarcely branched. Leaflets 1–1½ inch in length; the petioles rather longer than the leaflets. Heads 6–8 lines in diameter, 12–18-flowered, on slender peduncles. Flowers purple, tipped with white.

27. *T. aciculare* (Nutt. mss.): "erect, branching from the base; leaflets narrowly lanceolate-linear, acute, spinulosely and closely serrulate; lower stipules entire, acuminate, upper ones laciniate; involucre many-cleft, somewhat shorter than the globose head; flowers reflexed; teeth of the calyx simple (or rarely toothed at the base), subulate, as long as the tube, rather shorter than the corolla; legume linear-oblong, 2-seeded.

"Plains of St. Barbara. March–April.—① Rather tall; stem terete. Leaflets about 2 inches long, the upper ones on shortish petioles. Peduncles 3–4 inches long. Calyx at length nearly campanulate, with long pungent teeth. Corolla brownish-red.—Nearly allied to T. tridentatum." *Nuttall.*

28. *T. polyphyllum* (Nutt. mss.): "somewhat erect, glabrous; leaflets 3–5, lanceolate-linear, spinulosely serrulate; stipules acuminate, laciniate and spinulose; involucre many-cleft, somewhat shorter than the subglobose head; teeth of the calyx rather broadly subulate, pungent, about the length of the tube, and rather shorter than the abbreviated corolla; legume 2-seeded.

"Woods around St. Barbara, Upper California. April.—① Resembles the preceding, but the flowers are smaller and the leaflets longer and more numerous (sometimes as many as 6)." *Nuttall.*—We have seen no specimens of this and the preceding species: they seem to be very near T. involucratum.

29. *T. pauciflorum* (Nutt.! mss.): "glabrous, nearly erect, slender, much branched from the base; lower leaflets cuneate-oblong; upper ones lanceolate-linear, acuminate, distantly and minutely spinulose-serrulate; stipules laciniate, acuminate; involucre many-cleft, much shorter than the small few-flowered head; teeth of the calyx simple, broadly subulate, pungent, scarcely longer than the tube, and shorter than the corolla; legume 2-seeded.

"Wet places on the higher plains of the Oregon, particularly abundant nearly the outlet of the Wahlamet. April–May.—① Stem about a foot high, sometimes sparingly branched above, as well as from the base. Petioles of the lower leaves very long: the uppermost short. Lowest leaflets obovate, obtuse or emarginate; upper ones 8–10 lines long, and about 1½ lines wide. Stipules rather small. Involucre 12–16 parted, about one-third the length of the flowers. Heads 5–7-flowered, on long filiform (often axillary) peduncles. Lower part of the corolla dull purple; upper part whitish."

30. *T. fucatum* (Lindl.): glabrous, acending; leaflets roundish-cuneiform, sharply denticulate, rather thick; stipules (large) scarious, ovate, entire, mucronate with a long point; peduncles mostly longer than the leaves; involucre scarcely half the length of the somewhat hemispherical, few-flowered heads, 9-cleft; the segments ovate, acuminate, entire; calyx many times shorter than the corolla; the teeth triangular, acute, unequal, about the length of the tube; wings as long as the vexillum; legume stipitate, 5–8-seeded.—*Lindl.! bot. reg. t.* 1883.

California, *Douglas!*—① Heads 1-2 inches in diameter. Flowers cream-color mixed with red. Peduncles axillary.

31. *T. amplectens:* glabrous, erect, branching: leaflets obovate-cuneiform, mucronately denticulate; stipules ovate, scarious, entire, aristate-mucronate; peduncles shorter than the leaves; involucre about half the length of the 5–6-flowered head, 4–5 parted; the segments somewhat lobed, obtuse; calyx much shorter than the corolla, cleft almost to the base; the teeth subulate, very unequal; vexillum free, covering the wings; legume sessile, 6-seeded.

California, *Douglas!*—Plant 4–6 inches high. Leaflets very small, on slender petioles. Peduncles axillary. Head less than half an inch diameter.

Involucre scarious. Upper teeth of the calyx very short, about one-third the length of the others.

32. *T. cyathiferum* (Lindl.): prostrate or ascending, branched, glabrous; leaflets oblong and obovate-cuneate; mucronate, spinulose-serrate; stipules somewhat scarious, ovate, laciniate-toothed; peduncles long; involucre cyathiform (large), the border obtusely many-toothed, transversely rugose between the veins, somewhat shorter than the hemispherical many-flowered head; calyx oblong, somewhat inflated, membranaceous; the teeth setaceously 3–many-parted, as long as the corolla; legume dehiscent, 2-seeded.—*Lindl. bot. reg. sub t.* 1070; *Hook. fl. Bor.-Am.* 1. *p.* 133, *t.* 50.

Moist vallies of the Oregon, *Douglas!* Rocky Mountains, *Nuttall!*—① Stem 12–18 inches long. Stipules ovate, acuminate or obtuse. Involucre membranaceous, about 9-toothed. Heads compact. Corolla very short, pale rose-color: vexillum free: wings scarcely shorter than the vexillum: keel and stamen-tube united.

§ 3. *Heads not involucrate: legume coriaceous, globose, exserted, dehiscent by the ventral suture.*—CHASMALOBUS, Nutt. mss.

33. *T. gymnocarpon* (Nutt.! mss.): "cæspitose, minutely pubescent; caudex short and thick; leaves mostly radical; leaflets oval-oblong or elliptical, obtuse, serrate, nearly glabrous above; stipules scarious, oval; flowering stems very short, a little leafy at the summit; peduncles about the length of the petioles; heads 5–6-flowered; segments of the calyx subulate, as long as the tube; legume hairy, reticulate-rugose, 1–2-seeded, the stipe about the length of the calyx-tube."

"Dry hills of the Rocky Mountain range, near the sources of the Sweetwater of the Platte. May–June.—♃ Plant 2–3 inches high; the caudex thickly clothed with the vestiges of stipules. Leaflets 3–5 lines in length: petioles rather long. Flowering stems scarcely exserted, with one or two leaves and several peduncles aggregated at the summit. Flowers ochroleucous: vexillum free, oblong. Legume about the size of a small pea. Seeds large, one of them usually abortive." *Nuttall.*

30. MELILOTUS. *Tourn. inst. t.* 229; *Lam. ill. t.* 613; *W. & Arn. prodr. Ind Or. p.* 196.

Calyx tubular or campanulate, persistent, 5-toothed. Corolla deciduous: vexillum free, longer than the wings: keel-petals completely united, cohering with the wings, free from the stamen-tube. Style terminal, filiform. Legumes coriaceous, globose or ovoid, longer than the calyx, scarcely dehiscent, 1–few-seeded.—Annual or perennial (odorous) herbs. Leaves pinnately trifoliolate: leaflets mostly toothed; veins simple or forked. Stipules adnate to the base of the petiole. Flowers in axillary somewhat spicate racemes, yellow or white.

1. *M. officinalis* (Willd.): stem erect, with spreading branches; leaflets obovate-oblong, obtuse, remotely serrate; stipules setaceous; racemes rather loose; teeth of the calyx unequal, as long as the tube; corolla (yellow) more than twice the length of the calyx; petals nearly equal in length; legumes ovate, wrinkled, 2-seeded.—*Willd. enum. p.* 190; *Ell. sk.* 2. *p.* 199; *DC. prodr.* 2. *p.* 186. M. officinalis *a.*, *Linn.* M. vulgaris, *Eaton! man. ed.* 7. *p.* 391.

Rich alluvial soils, Canada! to Georgia. Introduced. June–Aug.—① Stem 2–4 feet high. Racemes elongated, somewhat panicled.—*Yellow Melilot.*

2. *M. leucantha* (Koch): stem erect, branched; leaflets ovate-oblong, truncate at the apex, mucronate, remotely serrate; stipules setaceous; racemes loose; teeth of the calyx unequal, as long as the tube; corolla (white) more than twice the length of the calyx, the keel and wings shorter than the vexillum; legumes 2-seeded, ovate, wrinkled.—*DC. l. c.* M. vulgaris, *Willd. enum. l. c.* M. officinalis, *Pursh, fl.* 2. *p.* 477. M. officinalis *β.* alba, *Nutt. gen* 2. *p.* 104. M. alba, *Thuil.; Eaton, l. c.* Trifolium officinale *β. Linn.*
Rich soils, along rivers, New York! and New England! Introduced. June–Aug.—② *DC.* Stem 3–6 feet high. Racemes elongated, panicled.—*White Melilot.*

3. *M. parviflora* (Desf.): stem ascending or erect, with spreading branches; leaflets of the lower leaves obovate-roundish and often nearly entire; upper ones cuneate-oblong or linear, truncate or emarginate, serrate; stipules linear-setaceous; spikes at first dense, at length rather loose; flowers (yellow) minute; teeth of the calyx broad, nearly equal, half the length of the corolla; wings almost as long as the keel and vexillum; legumes globose-ovate, wrinkled, 2-seeded. *Desf. fl. Atl.* 2. *p.* 192; *DC. l. c.; Hook. compan. to bot. mag.* 1. *p.* 22. M. Indica, *Smith.*
Near New Orleans, *Dr. Ingalls! Drummond.*—① Doubtless introduced.

4. *M. occidentalis* (Nutt. mss.): "stem erect, tall; leaflets linear-oblong or obovate, sharply serrate, truncate at the extremity; flowers (yellow) minute; teeth of the calyx unequal, as long as the tube; vexillum as long as the tube; legume 1–2-seeded, ovate-orbicular, slightly wrinkled."—M. parviflora? *Hook. & Arn. bot. Beechey, p.* 137?
"Sides of naked hills near the sea, California (also in Peru): apparently indigenous. Very nearly allied to M. linearis." *Nuttall!*—The description seems to agree well with M. parviflora, except in the unequal calyx-teeth.

31. MEDICAGO. *Linn.; Gærtn. fr. t.* 155; *DC. prodr.* 2. *p.* 171.

Calyx somewhat cylindrical, 5-cleft. Keel of the corolla remote from the vexillum. Legume usually many-seeded, of various forms, falcate or spirally coiled.—Herbaceous, or rarely shrubby, plants. Stipules often incised. Leaves palmately trifoliate; leaflets often toothed. Peduncles axillary, 1–2- or many-flowered. Flowers yellow.—*Medick.*

1. *M. sativa* (Linn.): stem erect, glabrous; leaflets obovate-oblong, toothed above, mucronate; stipules lanceolate, somewhat toothed; flowers racemose; legumes spirally twisted, finely reticulated. *DC. prodr.* 2. *p.* 173; *Eng. bot. t.* 1479; *Darlingt. fl. Cest. p.* 405.
Fields and roadsides, New York! and Pennsylvania. Introduced. June–July.—♃ Flowers conspicuous, violet.—*Lucerne.*

2. *M. maculata* (Willd.): stem prostrate; leaflets obcordate, toothed, spotted; stipules toothed; peduncles 3–5-flowered; legumes compactly spiral, furrowed on the margin and fringed with a double row of long curved spines; seeds reniform, yellowish.—*DC. prodr.* 2. *p.* 179; *Hook. compan. to bot. mag.* 1. *p.* 21.
Near New Orleans, *Drummond!* Red River, Louisiana, *Dr. Hale!* Introduced.—Plant 1–2 feet high. Leaflets conspicuously toothed, marked with a purple spot in the centre. Flowers small, ~~purplish~~. Convolutions of the legume 3–5.

3. *M. denticulata* (Willd.): nearly glabrous; stem prostrate; leaflets obcordate; stipules laciniate; peduncles 2–3 flowered; legumes broad, loosely spiral and flat, with 1–3 convolutions, reticulated; the margin thin, keeled

with a double compact row of subulate curved prickles.—*DC. prodr.* 2. *p.* 176; *Hook. Brit. fl. p.* 334, *& compan. to bot. mag.* 1. *p.* 21; *Hook. & Arn. bot. Beechey*, 1. *p.* 137.

Louisiana, *Drummond, Nuttall!* California, *Beechey*. Introduced.—Plant 1–2 feet long. Leaflets an inch long, emarginate. Peduncles about as long as the leaves. Flowers small, purplish.

4. *M. lupulina* (Linn.): stem procumbent; leaflets obovate-cuneate, toothed at the apex; stipules lanceolate, acute, nearly entire; flowers spiked; legumes reniform, 1-seeded.—*Eng. bot. t.* 971; *Michx.! fl.* 2. *p.* 60; *Ell. sk.* 2. *p.* 247; *DC. prodr.* 2. *p.* 172.

Cultivated grounds and waste fields, Canada! to Florida. Introduced. June–Aug.—Stem 6–12 inches long, pubescent. Flowers small, in roundish or oblong heads, yellow. Legumes black when ripe.

Besides the above-described species (all of which have doubtless been introduced from Europe), M. intertexta and M. nigra occasionally spring up in cultivated grounds, particularly in the Southern States.

32. HOSACKIA. *Douglas; Benth. in bot. reg. sub t.* 1257; *Hook. fl. Bor.-Am.* 1. *p.* 134.

Hosackia & Lotus § Microlotus, *Benth. in Linn. trans.*

Calyx tubular, or somewhat campanulate, 5-cleft or 5-toothed. Vexillum as long as the spreading wings, often distant from those of the other petals: keel as long as the vexillum. Style subulate, usually somewhat straight: stigma capitate. Legume somewhat compressed, wingless.—Herbaceous or rarely suffrutescent plants (all American).—Leaves pinnate or pinnately trifoliolate. Stipules usually very minute, resembling glands, sometimes scarious or foliaceous, but differing in form from the leaflets. Peduncles axillary or umbellately 1–3-many-flowered, commonly with a 1–3-foliolate bract below the flowers.

We have adopted, with some modifications, Bentham's original views of the limits of this genus, as given in the Botanical Register. In a subsequent paper, in the Transactions of the Linnæan Society, Mr. Bentham proposes to restrict the genus Hosackia to the species with umbellate flowers and pinnate leaves; considering those with 1-flowered peduncles and trifoliolate leaves as a subgenus of Lotus, which he named Microlotus. The subsequent discovery, however, of several 1-flowered species with truly pinnate leaves shows a complete transition from Microlotus to Hosackia, which itself scarcely differs from Lotus except in the stipules. We adopt the following subdivisions in accordance with the views of our friend Mr. Nuttall, except that he considers Drepanolobus as forming a distinct genus.

§ 1. *Umbels many-flowered: corolla much longer than the calyx: vexillum on a slender claw which is distant from those of the other petals; keel obtuse: legume nearly straight, slightly compressed (rarely flat), not attenuated upwards. Mostly perennial herbs: leaves pinnately* 5–15-(*rarely* 3-) *foliolate: stipules membranaceous, foliaceous (but very different from the leaflets) or minute and gland-like.*—EUHOSACKIA.

* *Stipules foliaceous or scarious.*

1. *H. bicolor* (Dougl.): glabrous, decumbent; leaflets 7–9, somewhat opposite, oblong and obovate; stipules cordate-ovate, membranaceous, very ob-

tuse; umbels 6–8-flowered; bracts 1-foliolate or none; teeth of the calyx half as long as the tube.—*Benth. in bot. reg. t.* 1257, *& in Linn. trans.* 17. *p.* 364; *Hook. fl. Bor.-Am.* 1. *p.* 134; *Hook. & Arn. bot. Beechey*, 1. *p.* 137. Lotus pinnatus, *Hook. bot. mag. t.* 2913.

Low alluvial soils from the Rocky Mountains to the Pacific, along the valley and plains of the Oregon, *Nuttall! Douglas.* California, *Beechey.*—♃? Stems spreading, 1–2 feet long. Leaflets often an inch or more in length and 3–5 lines wide. Stipules about 2 lines long. Flowers yellow, mixed with white. Legumes 2–2½ inches long.—Mr. Nuttall informs us that he never found this species with bracts.

2. *H. stolonifera* (Lindl.): glabrous, erect, stoloniferous; leaflets 11–15, ovate or oblong, mucronate; stipules ovate, herbaceous; umbels many-flowered, capitate; bracts 1–3-foliolate; teeth of the calyx very short. *Lindl. bot. reg. t.* 1977.

California, *Douglas.*—♃ Stem (in the cultivated plant) about 3 feet high. Stipules about 2 lines long, acute. Flowers greenish, mixed with purple. Teeth of the calyx scarcely one-fourth of the length of the tube. Legume about 2 inches long, glabrous. Embryo sometimes with 3 cotyledons. *Lindl.* —The largest species of the genus.

3. *H. gracilis* (Benth.): glabrous, decumbent; lower leaflets obovate-cuneate; stipules large, membranaceous; bracts trifoliolate; calyx somewhat bilabiate, the teeth half as long as the tube.—*Benth. in Linn. trans.* 17. p. 365.

California, *Douglas.* Moist places around Monterey, *Nuttall!*— ♃ Allied to H. bicolor, but smaller and much more slender. Leaflets about 7, half an inch long. Umbels 6–8-flowered. Vexillum yellow: wings and keel pale rose-purple.

4. *H. platycarpa* (Nutt.! mss.): "slightly pubescent, robust; leaflets 7–9 pairs, mostly opposite, oblong-oval or obovate; stipules small, cordate-ovate, membranaceous, obtuse; peduncles bracteate with a 2–4-foliolate leaf below the umbel; calyx truncate, minutely-toothed; legume rather broad and flat.

"'Mountain woods,' *Douglas;* probably the Blue Mountains of the Oregon.—Legume 2 inches long and nearly ½ inch wide." *Nuttall!* This very distinct species was communicated to Mr. Nuttall by Dr. Gardner of Fort Vancouver, who obtained specimens of it from the late Mr. Douglas.

5. *H. stipularis* (Benth.): stems and petioles hairy; stipules foliaceous, broadly semisagittate; bracts trifoliolate; teeth of the calyx shorter than the tube. *Benth. l. c. p.* 365.

California, *Douglas.*—Plant of the size and habit of H. bicolor. *Benth.*

6. *H. crassifolia* (Benth.): leaflets broadly obovate, somewhat fleshy; stipules scarious; bracts 3-foliolate; teeth of the calyx very short. *Benth. l. c.*

California, *Douglas.*—Size and habit of H. bicolor, but the flowers smaller. —*Benth.*

** *Stipules minute, blackish, gland-like.*

7. *H. ochroleuca* (Nutt.! mss.): "pubescent, nearly erect; leaves sessile; leaflets 3–4 pairs, obovate or oblong, alternate; stipules very minute; umbels bracteate with a single sessile leaflet; teeth of the calyx acuminate, as long as the tube; legume subterete.

"Shady mountain woods near St. Barbara. March–April.—♃ Plant rather robust; the young leaves, stem and flower buds almost silky-pubescent. Leaflets nearly an inch long. Flowers ochroleucous, 6–7 lines long.—Allied to H. grandiflora, *Benth.*"—*Nuttall.*

8. *H. grandiflora* (Benth.): stem slightly pubescent above; leaflets about 7; peduncles elongated; bract 1-foliolate, sessile; teeth of the calyx scarcely shorter than the tube. *Benth. l. c. p.* 366.

California, *Douglas.*—♃ Size and habit of H. bicolor, but the flowers larger. Young leaves and calyces pubescent. Stipules only observable in very young leaves. *Benth.*

§ 2. *Umbels many- (rarely* 1–3-) *flowered: corolla much larger than the calyx: vexillum on a rather long and slender claw which is distant from those of the other petals; keel obtuse: legume rather terete, incurved, rostrate with the upper and attenuated portion. Herbaceous or suffruticose plants: leaves pinnately* 5–7- (*rarely* 3-)*foliolate: stipules minute, blackish, gland-like.*— DREPANOLOBUS, Nutt.

9. *H. decumbens* (Benth.): herbaceous, softly pubescent, decumbent; leaflets 4–5, alternate, oval-cuneate, or rhombic-ovate, mostly acute; peduncles scarcely longer than the leaves; bracts 1–3-foliolate; legume pubescent, carinate.—*Benth ! in bot. reg. l. c., & in Linn. trans. l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 34. Drepanolobus decumbens, *Nutt.! mss.*

β. glabriuscula: leaves smaller, verdigris-green when dry. *Hook. & Arn. bot. Beechey,* 1. *p.* 137.

Dry open woods on the Oregon, particularly about Fort Vancouver, *Nuttall! Douglas, Scouler! β.* California, *Beechey.* June.—♃ Stems 1–2 feet long, forming wide tufts. Leaflets half an inch long, sometimes distant. Stipules resembling very minute spines, deciduous. Umbels numerous, 5–8-flowered. Teeth of the calyx as long as the tube. Corolla yellow. Legume about 2-seeded, falcate, the beak longer than the seed-bearing portion.

10. *H. tomentosa* (Hook. & Arn.): herbaceous, canescently tomentose, decumbent; leaflets 4–6, obovate, mostly obtuse; peduncles very short; bracts 1-foliolate; teeth of the calyx shorter than the tube.—*Hook. & Arn. bot. Beechey,* 1. *p.* 137; *Benth.! in Linn. trans. l. c.* Drepanolobus lanatus, *Nutt.! mss.*

Dry hills in the shade, near Monterey, California, *Nuttall! Douglas!*— ♃ Stem and young leaves very woolly and white. Branches spreading on the ground forming a large patch. Leaflets half an inch long. Umbels on the upper part of the stem nearly sessile; lower ones on peduncles half an inch or more in length. Flowers much smaller than in the preceding species, yellow, with red wings.

11. *H. micrantha* (Nutt.): "herbaceous, pubescent (particularly the young shoots), prostrate; leaflets 4–6, cuneate or obovate, obtuse; umbels almost sessile, few-flowered, without bracts, *Nutt.! mss.* (under Drepanolobus.)

Near Monterey, California. March–April, *Nuttall!*— (1) Stems spreading on the ground. Leaves smaller and more rounded than in the preceding species. Umbels 3–6-flowered; the flowers minute, yellow. Teeth of the calyx short. Vexillum shorter than the keel. Legume pubescent, with a very long involute point.

12. *H. cytisoides* (Benth.): suffruticose, somewhat pubescent, decumbent; branches angular; leaflets 3–6, cuneate-oblong; petioles very short; umbels many-flowered, on short peduncles; bracts of 1–3 minute leaflets; teeth of the calyx subulate, recurved.—*Benth.! l. c.* Drepanolobus cytisoides, *Nutt.! mss.*

β. rubescens: calyx whitish pubescent; umbels 10–15-flowered; flowers red mixed with yellow; bracts 1-foliolate.—Drepanolobus rubescens, *Nutt.! mss.*

Near St. Barbara, California, *Nuttall! Douglas! β.* Near St. Diego, *Nuttall!*—Stem much branched. Leaflets rather thick, often somewhat acute with a few short appressed hairs on both surfaces. Stipules rather conspicuous, resembling tubercles. Umbels 5–10-flowered, the flowers about 4 lines long, yellow. Teeth of the calyx almost aristate, rather more than half the length of the tube.

13. *H. prostrata* (Nutt.): "suffruticose, nearly glabrous, prostrate; branches terete; leaflets 5–7, oblong, obtuse; peduncles longer than the leaves, often elongated; umbels, many-flowered; bracts 1-foliolate; calyx much shorter than the corolla, the teeth scarcely one-third the length of the tube: legume with a very long subulate point. *Nutt.! mss.* (under Drepanolobus.)

"Plains near the sea; St. Diego, and St. Barbara, California. April.—Branches numerous, spreading, 2–3 feet long. Flowers as large as in the preceding species, yellow, the tip of the vexillum and wings red. Legume nearly glabrous." *Nuttall.*

14. *H. juncea* (Benth.): "suffruticose, glabrous; branches angular and erect; leaflets 3–5, oblong, obtuse; peduncles very short, 3–5-flowered, without bracts; calyx somewhat prismatic, with very short pointless teeth.—*Benth. l. c.* Drepanolobus junceus." *Nutt.! mss.*

Dry hill sides near the sea, St. Barbara, California, *Nuttall! Douglas.*—Somewhat sempervirent; the branches very numerous and greenish. Leaflets thick, about ¼ of an inch long. Stipules hard and persistent, resembling tubercles. Calyx glabrous, the teeth triangular, scarcely one-sixth the length of the tube. Corolla yellow.

15. *H. crassifolia* (Nutt.): "suffruticose, decumbent, nearly glabrous; branches angular; leaflets 3–4, oblong or cuneate-oblong, obtuse, thick; umbels nearly sessile, 5–7-flowered; bracts none; teeth of the calyx about one-fourth the length of the tube; legume with a very long subulate point." *Nutt.! mss.* (under Drepanolobus.)

"With the preceding.—Young shoots pubescent. Flowers of various shades of yellow, sometimes nearly red." *Nuttall.*

16. *H. scoparia* (Nutt.): "suffruticose, erect, much branched, nearly glabrous; branches terete; leaflets 3–4, linear-oblong, somewhat acute; umbels sessile, 5–7-flowered; bracts none; teeth of the calyx subulate, about one-third the length of the tube; legume with a very long subulate point." *Nutt.! mss.* (under Drepanolobus.)

"With the preceding. March–April.—Stems 3–4 feet high, the upper part of the branches loaded with flowers. Leaves somewhat sempervirent: leaflets 4–5 lines long. Glandular stipules conspicuous and persistent. Corolla yellow, often tinged with red.—Used in California for making brooms." *Nuttall.*

17. *H. sericea* (Benth.): densely silky-tomentose; leaflets usually 3; peduncles very short, 1–3-flowered, without bracts. *Benth. l. c.*

California, *Douglas.*—Near H. cytisoides, but very distinct. Leaves larger, nearly sessile. Flowers rather larger. Wings slightly but constantly adherent to the keel. *Benth.*—Perhaps not of this section, and only referred here on account of Bentham's observation, that it is near H. cytisoides.

§ 3. *Peduncles umbellately 1–3-flowered: corolla longer than the calyx: vexillum on a short narrow claw, which is approximated to those of the other petals: keel somewhat rostrate: legume straight, somewhat compressed, not attenuated above. Mostly annuals: leaves pinnately 5–7-foliolate, with minute gland-like stipules.*—MICROLOTUS, Benth. (partly), Nutt. mss.

18. *H. parviflora* (Benth.): erect, nearly glabrous, branched from the base; leaflets 4–6, oblong and obovate, alternate; peduncles 1-flowered; bracts 3-foliolate; calyx one-third the length of the corolla; teeth linear-subulate.

—*Benth. in bot. reg. sub t.* 1257; *Hook. ! fl. Bor.-Am.* 1. *p.* 135. Lotus micranthus, *Benth. in Linn. trans. l. c.*

Oregon, *Scouler ! Nuttall !* California *Menzies*. June.—(1) Stem 4–12 inches high. Leaflets pale and somewhat glaucous beneath. Peduncles longer than the petioles. Bracts rarely 1-foliolate. Flowers pale rose-color. Legume about ¾ of an inch long, nearly glabrous, 3–6-seeded.

19. *H. microphylla* (Nutt. ! mss.): "nearly prostrate and much branched, somewhat strigosely pubescent; leaflets 4–5, obovate, or oval-oblong, alternate; peduncles shorter or a little longer than the leaves; bract usually trifoliolate.

"With the preceding, but rare: biennial; the leaves fewer and much smaller; petioles very short. Peduncles occasionally 2-flowered." *Nuttall.*

20. *H. nudiflora* (Nutt. ! mss.): "somewhat pubescent with appressed hairs, diffusely branched from the base; leaflets 5–7, alternate oblong-linear, acute; peduncles with a minute glandular scale in the place of the bract: legume pubescent, straight, curved at the point, somewhat terete.

"Gravelly hills near Monterey. March.—(1) A minute species. Leaves 2–3 lines long. Flowers large in proportion to the size of the plant. Corolla twice as long as the calyx. Legume half an inch in length." *Nuttall.*

21. *H. strigosa* (Nutt. ! mss.): "strigosely pubescent, decumbent, much branched; leaflets 6–9, alternate, lanceolate-linear, acute; peduncles naked, o with a bract of 1–3 minute leaflets; corolla nearly twice as long as the calyx; legume pubescent, nearly straight."

Dry gravelly hills near Monterey. March—♃? A small plant like the following. Bracts sometimes wanting on the lowest flowers, 1–3-foliolate on the upper ones. Flowers yellow. Legume about an inch long, 7–10-seeded." *Nuttall.* [illegible]

22. *H. rubella* (Nutt. ! mss.): "strigosely pubescent, much branched; leaflets 6–10, alternate, linear, rather obtuse; peduncles 1–3-flowered, naked, or with a bract of a single leaflet; legume pubescent, nearly straight.

"With the preceding, to which it is closely allied, but with smaller and reddish flowers.—♃ Legume an inch long, 7–10-seeded. Seeds yellowish-brown, truncate at each end." *Nuttall.*

23. *H. maritima* (Nutt. ! mss.): "rather succulent, somewhat strigose, prostrate, much branched: leaflets 4–5, alternate, obovate, obtuse; peduncles 1–3-flowered, naked or with a trifoliolate bract; legume glabrous, subterete, straight.

"Clayey soils and on broken declivities near the sea, St. Barbara. March. —(1)? Flowers numerous, yellow and rather conspicuous, the early ones solitary and without a bract.—In this and the 2 preceding species the petioles are unusually broad, so as to appear somewhat winged." *Nuttall.*

24. *H. subpinnata:* canescently villous, branched from the base; leaflets about 5, obovate, obtuse; flowers solitary, nearly sessile; bracts none; teeth of the calyx subulate, as long as the tube; legume pubescent.—Lotus subpinnatus, *Lagas. gen. & p.* 23; *Hook. & Arn. bot. Beechey, p.* 17, *t.* 8; *Benth. in Linn. trans. l. c.* Anthyllis Chilensis, *DC. prodr.* 2. *p.* 171.

California, *Douglas ! Nuttall !*—(1) Stem 3–6 inches high, apparently procumbent. Leaflets one-third of an inch long. Stipules extremely minute, deciduous. Legume about 8 lines long, nearly obtuse, tipped with the very short recurved base of the style.—This species occurs likewise in Chili.

25. *H. Wrangeliana:* diffuse, sparsely hirsute; leaflets 4, oblong, somewhat glaucous; peduncles axillary, very short, 1-flowered; bracts none; legume pubescent. *Fisch. & Meyer.* Lotus Wrangelianus, *Fisch. & Meyer, ind. sem. St. Petersb.* 1835. L. Macraei, *Benth. l. c.?*

California—Stem slender. Flowers small. Legume half an inch long. Seeds 5–7. *Fisch. & Meyer.*—Very near the preceding species, but apparently distinct.

§ 4. *Peduncles* 1-*flowered: corolla scarcely longer than the deeply-cleft calyx: vexillum slightly unguiculate, the claw approximated to those of the other petals: keel acute or slightly rostrate: legume linear, straight, not attenuated above. Mostly annuals: leaves pinnately* 3-*foliolate, rarely* 1-*foliolate: stipules minute, blackish, gland-like.*—PSYCHOPSIS, Nutt. mss.

26. *H. Purshiana* (Benth.): erect or assurgent, more or less hairy, sometimes villous, much branched; leaves nearly sessile: leaflets 3 (rarely 4), oblong, rather acute; peduncles longer than the leaves; bract 1-foliolate; legume nearly terete.—*Benth.! in bot. reg. l. c.; Hook. & Arn. in bot. Beechey, p.* 137. Lotus sericeus, *Pursh, fl.* 2. *p.* 489; *DC. prodr.* 2. *p.* 211; *Benth.! in Linn. trans. l. c.* Trigonella Americana, *Nutt.! gen.* 2. *p.* 120; *DC. prodr.* 2. *p.* 185.

Prairies of Missouri, *Nuttall!* Arkansas, *Dr. Pitcher! Dr. Leavenworth!* Oregon, *Scouler!* California, *Beechey;* North Carolina, *Schweinitz! Curtis!* —Plant 12–15 inches high. Leaflets 5–10 lines long. Flowers 3–4 lines long. Calyx deeply parted; segments linear subulate, nearly as long as the corolla when the flower first expands. Petals rose-color; the vexillum with deeper minute stripes. Legume an inch or more in length, about 6-seeded, with spongy imperfect partitions between the seeds.—A variable species in its pubescence and in the size of the leaves.

H. elata (Nutt.! mss.): "sparsely hirsute; stem tall and somewhat branching above; leaves on short petioles; leaflets elliptical-oblong, somewhat obtuse; peduncles longer than the leaves; bract of a single leaflet; calyx two-thirds the length of the corolla, the segments twice as long as the tube; legume terete, slender.

β. glabra (Nutt.! mss.): "erect, branching from the base; leaflets oblong and cuneate, rather acute, somewhat fleshy; peduncles longer than the leaves; calyx nearly as long as the corolla; legume glabrous.

"Gravelly bars of the Wahlamet and Oregon. May.—Very near the preceding, but with much smaller and almost white flowers; the leaves are also larger, and the stem scarcely branched." *Nuttall.*—Our specimen of this plant, received from Mr. Nuttall, is about a foot high. It differs chiefly from some forms of L. sericeus in the distinctly petiolate leaves.

28. *H. floribunda* (Nutt.! mss.): "smoothish or pubescent, much branched and decumbent; leaflets elliptical-oblong, the lateral ones narrower; extreme branches with unifoliolate leaves; flowers on very short peduncles, approximated towards the extremity of the branchlets; bract of a single leaflet; legume compressed, few-seeded.

"Plains of the Rocky Mountain range, towards the Oregon. June–July. —Also allied to the two preceding species, but distinguished by its numerous almost sessile flowers. Legume about an inch long 4–5-seeded." *Nuttall.*

29. *H. pilosa* (Nutt.! mss.): "densely clothed with soft hairs, decumbent and much branched; leaflets elliptical-oblong, obtuse or slightly acute, branchlets unifoliolate; bract of a single leaf; flowers scattered; peduncles very short; legume flattish, few-seeded.

"With the preceding, which it resembles, but is much smaller. Leaflets 3–4 lines long. Peduncles shorter than the leaves. Legume about $\frac{3}{4}$ of an inch long." *Nuttall.*

30. *H. mollis* (Nutt.! mss.): "hirsute with spreading hairs; erect, branch-

ing from the base; leaflets oblong and cuneate oblong, obtuse; peduncles longer than the leaves; bract of a single leaflet; calyx as long as the corolla; legume almost flat, glabrous.

"Gravel-bars and sandy shores of the Wahlamet, near the Falls. June.—About a span high, moderately branching. Bract small." *Nuttall.*—Our specimens are very much like those of H. floribunda.

96, [illegible]
[illegible]

TRIBE V. ASTRAGALEÆ. *Adans.*

Corolla papilionaceous. Stamens monadelphous (9 & 1). Legume continuous, turgid or inflated (rarely flattened), often spuriously 2-celled or partly 2-celled by the introflexion of one of the sutures, dehiscent, several- (rarely 1-2-) seeded. Radicle incurved.—Erect or decumbent, herbaceous or rarely suffrutescent plants. Leaves unequally pinnate (very rarely palmately trifoliolate), or seldom reduced to a single leaflet, exstipellate. Inflorescence axillary or radical, racemose or spicate.

83. ASTRAGALUS. *Linn.* (partly); *DC. Astrag., & prodr.* 2. p. 281.

Calyx 5-toothed. Keel obtuse. Legume longitudinally 2-celled, or partly 2-celled, by the introflexion of the lower suture.—Herbaceous or suffruticose plants, commonly more or less canescent; the hairs often fixed by the middle.[*] Leaves unequally pinnate, with numerous leaflets. Stipules often adnate to the base of the petiole. Flowers spiked or racemose, rarely solitary.

§ 1. *Stipules not adnate to the petiole: flowers purple or white.*—Purpurascentes, *DC.*

* *Stipules partly cohering with each other opposite the petiole.*

1. *A. Hypoglottis* (Linn.): procumbent, diffuse, somewhat hirsute; stipules lanceolate, more or less cohering; leaflets 8–10–12 pairs, obovate or elliptical; spikes capitate; peduncles longer than the leaves; bracts longer than the blackish pilose calyx; teeth of the calyx as long as the tube; legume ovate, triquetrous, erect, capitate; cells mostly 1-seeded. *Eng. bot. t.* 274; *DC. Astrag.* t. 14, *& prodr.* 2. p. 281; *Hook.! fl. Bor.-Am.* 1. *p.* 148.

β. ? polyspermus: dwarfish and much branched, somewhat decumbent, pubescent; leaflets elliptical and obovate-oblong, sometimes emarginate; peduncles as long as the leaves; calyx longer than the bracts, very hirsute, the hairs partly black; the teeth scarcely half as long as the tube; legume oblong; cells 3–4-seeded.—A. Hypoglottis, *Nutt.! gen.* 2. *p.* 99;

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[*] De Candolle (*prodr.* 2. *p.* 294) notices the centrally fixed hairs of Astragalus asper, and employs the character in his diagnosis of that species. He intimates also (*in mem. Leg.*) that the same kind of hairs exist in some other Astragali. We have observed them in many of the species in which the pubescence is appressed; particularly in the following:—A. Mortoni, *Nutt.;* Leontinus, *Jacq.;* Austriacus, *Linn.;* subulatus, *Bieb.;* corniculatus, *Bieb.;* ceratoides, *Bieb.;* virgatus, *Pall.;* Hyrcanus, *Pall.;* brachylobus, *DC.;* Stevenianus, *DC.;* linearifolius, *Pers.;* Onobrychis, *Linn.;* aduncus, *Bieb.;* adsurgens, *Pall.;* Laxmanni, *Pall.;* Missouriensis, *Nutt.;* megalanthus, *DC.;* albicaulis, *DC.;* hamosus, *Linn.;* microphyllus, *Linn.;* depressus, *Linn.;* Canadensis, *Linn.;* uliginosus, *Linn.;* Massilensis, *Lam.;* ammodytes, *Pall.;* Monspessulanus, *Linn.;* & incanus, *Linn.*

Torr.! in ann. lyc. New-York, 2. *p*. 179. A. dasyglottis, *Nutt.! mss.*, not of *Ledeb.?*

On the Saskatchawan, and other parts of British America, *Drummond! Douglas*. *β*. On the Platte, and near the sources of the Canadian, *Nuttall! Dr. James!* May.—♃ Stem 3–6 inches long. Leaflets about half an inch long, often emarginate. Bracts lanceolate. Teeth of the calyx subulate. Corolla bright purple. Ovary somewhat tomentose (in *β*. villous), with 14–16 ovules.—Our *β*. is near A. Onobrychoides, and is probably the Astragalus from Altai noticed by Hooker, in which the legumes are 4–8-seeded.

2. *A. pauciflor~~a~~* us (Hook.): decumbent, canescent with appressed hairs: lower stipules cohering to the summit; leaflets 3–5 pairs, oblong, acute; peduncles about as long as the leaves, 2–4-flowered; flowers (small) in loose racemes; bracts as long as the pedicels; calyx clothed with whitish hairs, the teeth as long as the tube. *Hook. fl. Bor.-Am.* 1. *p*. 149.

Among rocks in the more elevated regions of the Rocky Mountains, *Drummond*.—♃ Root long and slender: caudex divided and throwing off several slender decumbent stems from a span to a foot in length. Leaflets 3–4 lines long. Upper stipules large, cohering only below. Peduncles 1–1½ inch long. Calyx short, campanulate. Petals deep blue. Legume unknown. *Hook*.

3. *A. vaginatus* (Pall.): erect, pubescent; leaflets linear-lanceolate, acute; peduncles longer than the leaves; flowers in dense spikes, nodding; legumes linear, straight. *DC.—Pall. Astrag. t.* 36, *ex DC. prodr.* 2. *p*. 283; *Hook. fl. Bor.-Am.* 1. *p*. 149.

Wooded country of Subarctic America, *Richardson*.—Very similar in habit to Phaca Aboriginorum. *Hook*. Flowers white and purple. *DC*.—A native also of Siberia.

** *Stipules neither cohering with each other nor adnate to the petiole: flowers purple or white, distant: legumes straight.*

4. *A. gracilis* (Nutt.): erect, slender, pubescent; leaflets 6–10 pairs, linear, remote, truncate or emarginate; racemes much longer than the leaves; legumes elliptical, straight, somewhat triquetrous, nodding, pubescent, one-celled, the lower suture a little inflexed.—*Nutt.! gen.* 2. *p*. 100 (excl. syn.); *DC. prodr.* 2. *p*. 284. Dalea parviflora, *Pursh! l. c. p.* ~~789.~~ 477.

Plains of the Missouri to the Rocky Mountains, *Bradbury*, *Nuttall! Dr. James!* May.—About two feet high. Leaflets ¾ of an inch long, scarcely one line wide. Stipules ovate, acuminate. Spike 2–3 inches long; the lower flowers remote. Flowers 3–4 lines long, somewhat secund, pale purple. Bracts lanceolate, scarcely longer than the short pedicels. Calyx canescently hirsute. Vexillum obovate, emarginate. "Legume about two lines long, many-seeded, acuminated with the recurved style." *Nuttall*.—A. tenellus, *Pursh*, which has been referred to this species, was founded, according to *Pursh*, *suppl.* 2. *p*. 789, on the leaves of his Ervum multiflorum and the fruit of an unknown Astragalus.

5. *A. stenophyllus:* erect, glabrous; leaflets 4–7 pairs, linear, remote; racemes oblong, loose, short, pedunculate, longer than the leaves; stipules small ovate, rather obtuse; pedicels longer than the minute lanceolate bracts; calyx pilose with blackish hairs; the teeth rather obtuse, much shorter than the tube.—A. leptophyllus, *Nutt.! in jour. acad. Philad.* 7. *p*. 18, not of *Desf.*

Head-waters of the Missouri, *Mr. Wyeth!* June.—A foot or more high. Stem rather stout, striate (scarcely angular), obtuse, slightly hirsute beneath. Raceme about 10-flowered. Flowers half an inch long, purplish? (ochroleucous? *Nutt.*) Teeth of the calyx about one-third the length of the tube.

Ovary linear, glabrous. Legume unknown.—Perhaps a species of Homalobus.

****Stipules neither cohering with each other nor with the petiole: flowers purple, in dense spikes or heads: vexillum narrow, elongated: root perennial.*

† Legume straight.

5. *A. adsurgens* (Pall.): nearly glabrous; stem elongated, ascending or prostrate; leaflets 7–12 pairs, oblong; stipules ovate, acuminate, membranaceous; peduncles longer than the leaves; spikes oblong, ovate or subglobose; flowers erect; vexillum about one-third longer than the wings; legumes erect, oblong, somewhat triangular, sulcate on the back, pointed with the style, pubescent with appressed hairs.—*Pall. Astrag. t.* 31, *ex DC. prodr.* 2. *p.* 287; *Hook. ! fl. Bor.-Am.* 1. *p.* 149.

Plains of the Assinaboin and Saskatchawan Rivers! and west to the Rocky Mountains.—About a foot high. Leaflets nearly an inch long, 4–5 lines wide, obtuse, pale green, slightly hairy on both surfaces; the hairs fixed by the middle. Stipules somewhat partially cohering. Spike 1–2 inches long. Bracts lanceolate, two-thirds the length of the calyx. Flowers as large as in A. Canadensis, bright purple. Calyx hirsute, the hairs partly black; teeth subulate, half as long as the tube.—Our specimens of this species from Hooker, differ from the European plant in the larger and partly cohering stipules, and in the longer bracts.

6. *A. Mortoni* (Nutt.): "nearly glabrous, erect; stipules broad and membranaceous; leaflets 6–8 pairs, oblong, obtuse; peduncles as long as the leaves; flowers in dense racemose spikes, nodding; calyx villous; teeth triangular-lanceolate, much shorter than the tube; ovary villous.—*Nutt. ! in jour. acad. Philad.* 7. *p.* 19.

About the sources and upper branches of the Missouri, *Mr. Wyeth!* (specimens from *Nuttall.*)—Plant a foot or more in height; hairs of the pubescence fixed by the middle. Leaflets distant, nearly an inch long, and 4 lines wide. Spike about 15-flowered; the flowers nearly as large as in A. Hypoglottis, purple?—Mr. Nuttall thinks that the flowers are ochroleucous, but they seem to be purplish.

7. *A. striatus* (Nutt.! mss.): "decumbent, robust, strigosely pubescent with appressed hairs, particularly in the young state; stem and peduncles sulcate; leaflets 7–9 pairs, linear-oblong, obtuse; stipules triangular-ovate, acuminate, membranaceous; spikes oblong, short, dense; bracts nearly as long as the calyx, lanceolate-ovate, acuminate; calyx clothed with short blackish hairs, the teeth nearly as long as the tube. A. Laxmanni, *Nutt. gen.* 2. *p.* 99, not of *Jacq.* A. adsurgens *β.* robustior, *Hook. fl. Bor.-Am.* 1. *p.* 149.

"Plains and hills of the Platte and Missouri. May.—Differs from A. adsurgens in being more robust and pubescent, and the flowers twice as large." *Nuttall.*

8. *A. goniatus* (Nutt.! mss.): "decumbent, nearly glabrous; stem angular; leaflets 7–10 pairs, linear-oblong, obtuse; stipules linear-lanceolate; peduncles longer than the leaves; spikes capitate; bracts oblong, shorter than the villous calyx; teeth of the calyx subulate, as long as the tube; legumes oblong, triquetrous, bicarinate, clothed with long white hairs, a little longer than the calyx.

"Rocky Mountains, near the sources of the Platte.—Plant about 4 inches high. Leaflets one-third of an inch long, slightly emarginate. Heads about an inch in diameter, compact, many-flowered. Flowers pale dull purple. Teeth of the calyx nearly equal. Legume about 4 lines long.

9. *A. Labradoricus* (DC.): procumbent, minutely pubescent; leaflets

ovate; spikes pedunculate; legumes secund, straight, acuminate at each end, pendulous. *DC. prodr.* 2. *p.* 287; *Hook. fl. Bor.-Am.* 1. *p.* 150. A. secundus, *Michx.! fl.* 2. *p.* 66; *Pursh, fl.* 2. *p.* 478.

Northern parts of Canada, *Michaux!* Labrador, *Colmaster* (ex *Pursh*). Flowers purple. Legume about ½ of an inch long, clothed with blackish hairs, somewhat stipitate, half 2-celled: cells 3–4-seeded.

10. *A. Missouriensis* (Nutt.): whole plant clothed with a short white pubescence, stems numerous, in a spreading tuft; stipules ovate; leaflets 5–10 pairs, elliptical and obovate-elliptical; peduncles a little longer than the leaves; spikes capitate, few-flowered; calyx pilose, with a mixture of blackish hairs; teeth one-third the length of the cylindrical tube; bracts ovate, much shorter than the calyx; legume oblong, somewhat compressed, hirsute when young, but at length somewhat glabrous, coriaceous, the lower suture a little introflexed.—*Nutt. ! gen.* 2. *p.* 99; *DC. prodr.* 2. *p.* 287. Oxytropis argentata, *Pursh, fl.* 2. *p.* 473; *Richards. l. c.?* not of *Pers.?*

β. leaflets obovate-orbicular.

On the Missouri. *β.* in the Rocky Mountains, *Nuttall!* May.—Root long, descending deeply. Stems 2–4 inches long. Leaflets 3–4 lines long, sometimes rather acute. Heads 9–12-flowered, large for the size of the plant, deep violet or sometimes nearly white. Legume about an inch long, abruptly acuminate, not stipitate, many-seeded.

11. *A. argophyllus* (Nutt. mss.): "villous with long white silky hairs, cæspitose; stems short and decumbent; stipules lanceolate, acuminate, membranaceous; leaflets 7–8 pairs, lanceolate-ovate and acute, or obovate and obtuse; peduncles shorter than the leaves; racemes short, loose, somewhat capitate, 3–8-flowered; bracts long and subulate; flowers distinctly pedicellate; calyx tubular; teeth subulate, about one-third the length of the tube; legume hirsute, oblong, with a broad curved point, transversely wrinkled, the lower suture slightly introflexed. A. melanocarpus, *Richards. app. Frankl. journ. ed.* 2. *p.* 28? ; *Hook. fl. Bor.-Am.* 1. *p.* 451?"

Valleys of the Rocky Mountains, near the sources of the Platte, *Nuttall!* —Much more villous than the preceding species, and the flowers of a brighter purple. Wings much longer than the keel. Legume nearly glabrous when ripe.—This and the preceding species have the lower suture of the legume so little introflexed, that they might almost be referred to Phaca.

12. *A. Shortianus* (Nutt. mss.); "stemless, canescent with appressed shining hairs; leaflets 5–7 pairs, roundish-elliptical or ovate, very obtuse; stipules ovate, obtuse; peduncles shorter than the leaves; raceme oblong; calyx clothed with white hairs, with rather long subulate teeth; legume large and turgid, cymbiform, with a short curved point, black and transversely wrinkled.

"Rocky Mountains, towards the plains of the Oregon.—Almost entirely silvery white. Leaflets nearly as broad as long, twice as large as in the preceding species, which it nearly resembles. Flowers ochroleucous?" *Nuttall.*

†† Legumes ovate, thick and fleshy.

13. *A. caryocarpus* (Ker): stems numerous, prostrate or assurgent, somewhat pubescent with appressed hairs; stipules ovate, acute; leaflets 8–12 pairs, elliptical; peduncles about the length of the leaves; raceme rather loose, short; bracts about twice the length of the pedicels; calyx thinly pilose with darkish hairs, cylindrical-oblong; legume thick and fleshy, ovate, rather acute, somewhat compressed, glabrous.—*Ker, bot. reg. t.* 176; *DC. prodr.* 2. *p.* 287; *Hook. fl. Bor.-Am.* 1. *p.* 150. A. carnosus, *Nutt. gen.* 2. *p.* 100. A. succulentus, *Richards. app. Frankl. journ. ed.* 2. *p.* 29. *Lindl. bot. reg. t.* 1324 (fide *Hook.*)

Plains of the Missouri and Platte; on the Saskatchawan, *Drummond*, &c.

Stems 6–12 inches long. Flowers violet-purple. Fruiting racemes prostrate. Legume the size of an ordinary plum. *Nutt.* –We have never received specimens of this plant.

14. *A. Plattensis* (Nutt.! mss.): "stems numerous, nearly prostrate, hirsute with whitish spreading hairs; stipules broadly ovate, acute; leaflets 8–12 pairs, elliptical or oblong; peduncles shorter than the leaves; racemes short; bracts about twice as long as the pedicels; calyx pilose with darkish hairs, oblong; legume thick and fleshy, broadly ovate, acuminate, somewhat compressed, pilose."—A. caryocarpus, *Torr. in ann. lyc. New-York*, 2. *p*. 179.

Plains of the Platte, *Nuttall! Dr. James!* May.—Stems 6–10 inches long. Leaflets mostly obtuse, on the lowest leaves obovate. Racemes 6–10-flowered: flowers pale purple, larger than in the preceding species. Teeth of the calyx nearly half the length of the tube. Fruit the size of a small plum.

15. *A. trichocalyx* (Nutt.! mss.): stems numerous, decumbent, somewhat pilose with appressed hairs; stipules lanceolate; leaflets 10–16 pairs, elliptical-oblong, obtuse; peduncles about the length of the leaves; racemes short and crowned; bracts a little longer than the pedicels; calyx densely villous with mostly whitish hairs; the teeth subulate, scarcely half the length of the tube; legume thick and somewhat fleshy, glabrous, finely wrinkled transversely."

Plains of Arkansas, *Nuttall! & Dr. Leavenworth!* who also found it in Texas!—Closely allied to A. caryocarpus, from which it differs, according to Nuttall, in its more numerous leaflets, paler flowers, and densely villous calyx. This and the two preceding species are remarkable for their succulent legumes, which are filled with a sweetish and rather agreeable juice, so that, as Mr. Nuttall informs us, they were frequently collected by the party with which he travelled, as an article of food.

††† Legumes curved.

16. *A. pachycarpus*: procumbent, diffuse, canescently hirsute with appressed hairs; stipules ovate, acuminate; leaflets 8–16 pairs, elliptical and oblong-obovate; peduncles much shorter than the leaves; (spikes few-flowered?) bracts lanceolate, scarcely as long as the short pedicels; legumes ovate, coriaceous, very turgid and dilated laterally, somewhat curved, with a short beak, inflexed at each suture, 2-celled, slightly wrinkled transversely.

Prairies of Arkansas, *Dr. Leavenworth!* — Stems 6–10 inches long, branched. Leaflets half an inch long, obtuse, or rather acute. Flowers not seen. Legume an inch long and half an inch broad, rounded at the base, with a deep furrow at each suture: cells 4–5-seeded.—Resembles A. caryocarpus in habit and foliage, but the fruit is entirely distinct.

17. *A. succumbens* (Dougl.): every part hirsute; stem procumbent, flexuous, branched; stipules small, oblong, acuminate; leaflets 5 pairs, obovate; peduncles shorter than the leaves; racemes capitate, oval; flowers (rather large) spreading, loose; bracts linear-subulate, longer than the very short pedicels; calyx loosely hirsute; legumes linear-lanceolate, falcate, glabrous and shining, bicarinate, 2-celled, many-seeded. *Hook. fl. Bor.-Am.* 1. *p*. 151.

Barren grounds of the Oregon and near the Wallawallah, *Douglas.*—Flowers large, purple and white. Legumes about two inches long, carinate on one side, with a deep furrow on the other, so that a transverse section represents the letter V. *Hook.*

18. *A. obcordatus* (Ell.): nearly glabrous, procumbent or assurgent; leaflets 7–12 pairs, obcordate, or obovate-oblong: peduncles about as long as the leaves; spikes 8–15-flowered, ovate or roundish, rather loose; calyx hairy; the teeth subulate, about as long as the tube, legumes oblong, triangular, a

little curved, acute at each end, strongly reticulated, the upper suture acute, the lower one deeply sulcate.—*Ell. sk.* 2. *p.* 227.

Bluffs on the St. Mary's River, Georgia, *Baldwin!* Newbern, N. Carolina, and Middle Florida, *Croom! Dr. Chapman!*—Plant 4–8 inches long. Leaves numerous: leaflets 3–4 lines long; those of the radical leaves very small and roundish. Stipules lanceolate. Flowers 4–5 lines long, white mixed with pale blue, distinctly pedicellate. Legume an inch in length, with a very acute and rather long point, but not acuminated.

[illegible]

20. *A. distortus*: sparsely pubescent, prostrate; leaflets 8–12 pairs, oblong or obovate, sometimes elliptical, usually emarginate; peduncles longer than the leaves; spike roundish or oblong, 10–20-flowered, loose; calyx clothed with blackish hairs; the teeth broad, acuminate, about half the length of the tube; legumes oblong, somewhat inflated, often somewhat twisted, abruptly pointed, scarcely reticulated; upper suture slightly inflexed; the lower one deeply sulcate.

Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond! Dr. Leavenworth!* May.—Stem 8–15 inches long. Lower leaflets often much smaller than the upper ones, and broader in proportion to their length. Flowers about half an inch long, blue, and sometimes (apparently) nearly white. Calyx about one-third the length of the corolla; the teeth almost villous. Legumes about 8 lines long, abruptly curved in the middle, sessile.—Very near the preceding species. The leaflets are usually narrower, the teeth of the calyx shorter, and clothed with black hairs; and the legume is quite different.

21. *A. diaphanus* (Dougl.): prostrate and diffuse, pilose-scabrous; stipules small, ovate, acuminate, leaflets 5–9 pairs, obovate; peduncles shorter than the leaves; flowers (small) in loose heads; bracts minute, ovate, acuminate, rather shorter than the pedicels; legumes falcate, somewhat reflexed, linear, compressed, somewhat diaphanous, nearly glabrous, 2-celled, many-seeded. *Hook. fl. Bor.-Am.* 1. *p.* 151.

Sandy soil near the Great Falls of the Oregon. Flowers scarcely more than half an inch long, purple, fading when dry to nearly white. Legume scarcely an inch long, flattened laterally. *Hook.*

22. *A. lentiginosus* (Dougl.): prostrate, somewhat glabrous; stipules small, ovate, acute; leaflets about 8 pairs, obovate; peduncles shorter than the leaves; flowers . . . . ; legumes ovate, acuminate, membranaceous, curved upwards, inflated at the base, 2-celled, somewhat glabrous. *Hook. fl. Bor.-Am.* 1. *p.* 151.

Subalpine ranges of the Blue Mountains of Oregon, *Douglas.*—Resembles A. tuberculosus, a native of Syria and Cappadocia. *Hook.*

23. *A. inflexus* (Dougl.): prostrate, diffuse, whole plant very villous-tomentose; stem flexuous; stipules rather large, ovate; leaflets 9–10 pairs, elliptical and rather acute, or obovate and obtuse; peduncles longer than the leaves, racemes loose, oval; bracts subulate, nearly as long as the membranaceous calyx; legumes ovate, acuminate, depressed, somewhat 2-celled, much curved upwards. *Hook. fl. Bor.-Am.* 1. *p.* 151.

Barren sandy grounds of the Oregon, from the junction of Lewis' and Clarke's River to the mountains, *Douglas.*—Whole plant (except the large purple corolla) woolly with long loose hairs. Calyx very thin, long and cylindrical, with slender flexuous teeth, nearly as long as the corolla. Legume an inch long, ovate and tapering a little at the base, but much more at the extremity, pointed, curved so as to be almost doubled, with a shallow broad furrow below. *Hook.*

22. *A. glareosus* (Dougl.): depressed; whole plant clothed with soft woolly hairs; stems short; stipules oblong, acuminate, appressed, membranaceous; leaflets 6 pairs, linear-oblong; peduncles as long as the leaves, or shorter,

3–4-flowered; pedicels short, bracts linear, half as long as the cylindrical elongated blackish hairy calyx. *Hook. fl. Bor.-Am.* 1. *p.* 152.

Dry gravelly banks of rivers; upper part of the Oregon to the mountains, *Douglas.* April–May.—Plant about five inches high, with densely woolly and whitish foliage, which the large flowers of its numerous peduncles, of a rich purple-blue color, just exceed in height. The legumes were not obtained. *Hook.*

**** *Stipules cohering neither with each other, nor with the petiole: flowers in dense spikes or heads: legumes straight: root annual.*

25. *A. leptocarpus:* erect or assurgent, branched from the base, somewhat pubescent; leaflets 6–8 pairs, cuneate-elliptical, retuse; stipules lanceolate, acuminate; peduncles longer than the leaves; spikes ovate, few-(3–7-) flowered, loose; bracts subulate, rather minute; calyx campanulate; the teeth subulate, shorter than the tube; legumes linear, very narrow, elongated, membranaceous, glabrous, 2-celled, 11–12-seeded.

Near the Sabine River, *Dr. Leavenworth!* Texas, *Drummond!* April.—Stem about a foot long, with somewhat spreading branches. Leaflets 4–5 lines long, a little hairy on the midrib beneath, glabrous above. Flowers deep purplish-blue, half an inch long. Calyx clothed with appressed dark-colored hairs. Vexillum broadly obovate: keel broad, obtuse, with a narrow furrow along the back.—We have an Astragalus without fruit, collected in California by Douglas, which we can hardly distinguish from this species.

26. *A. reflexus:* assurgent; stem and lower surface of the leaves hairy; leaflets 6–7 pairs, cuneate-obovate, emarginate; stipules ovate-lanceolate (rather large), acute; peduncles longer than the leaves; spikes ovate, few-(6–10-) flowered, the flowers spreading; bracts minute; calyx campanulate, the teeth subulate, longer than the tube; legumes ovate oblong, rather acute, reflexed, thick and coriaceous, corrugated transversely, glabrous, 2-celled; the upper suture nearly straight and prominently ridged, the lower deeply introflexed; cells 3–4-seeded.

Texas, *Drummond!*—A foot or more in height, slender, branched. Leaflets half an inch long, usually truncate and emarginate. Flowers one-third of an inch long, purplish. Vexillum narrow, elongated: keel obtusely rostrate, much longer than the wings. Legumes one-third of an inch long, somewhat triangular. A remarkable species, resembling Oxytropis in its rostrate keel; but the legume is that of a genuine Astragalus.

***** *Stipules cohering neither with each other, nor with the petiole: flowers purple or white: legumes curved: root annual.*

27. *A. Nuttallianus* (DC.): decumbent or assurgent, minutely pubescent; leaflets 5–7 pairs, linear-oblong or elliptical, the lower ones emarginate, glabrous above; stipules lanceolate, acute; peduncles a little longer than the leaves; heads 3–8-flowered; the flowers somewhat umbellate and spreading; bracts minute, ovate, shorter than the pedicels; calyx campanulate, deeply 5-cleft; segments lanceolate, acute; legume linear, somewhat arcuate and turned upwards, bicarinate, glabrous, reticulated; cells 6-seeded.—*DC.! prodr.* 2. *p.* 289. A. micranthus, *Nutt.! in jour. acad. Philad.* 3. *p.* 122, not of *Desv.*

β. trichocarpus: heads 3–5-flowered; calyx and ovary nearly hispid; legumes hairy.

Naked places in the prairies of Red River and the Arkansas, *Nuttall! Dr. Leavenworth! β.* Texas, *Drummond!* May–June—Stem 10–18 inches high, branched from the base. Leaflets 4–5 lines long, pubescent with appressed hairs beneath. Flowers one-third of an inch long, blue. Ovary glabrous. Legume 8–10 lines long, and 1½ line wide, slightly curved towards the base, with a short abrupt point. Seeds somewhat truncate.—In Dr. Leavenworth's and in Drummond's specimens the legumes are straighter, longer, and less tumid than in Mr. Nuttall's; but in other respects they agree extremely well.

§ 2. *Stipules not cohering with the petiole: flowers ochroleucous.*— Ochroleuci, *DC.*

* *Stipules not cohering with each other: legumes often curved: root annual.*

28. *A. multicaulis* (Nutt.! mss.): "canescent; stems much branched from the base and cæspitose; leaflets 3–6 pairs, mostly obovate, obtuse; stipules ovate, membranaceous; racemes 3–5-flowered, shorter than the leaves; bracts subulate; calyx campanulate; the teeth broadly subulate, as long as the tube; legumes oblong, very hairy, much curved, inflated, acute, partly 2-celled, the upper suture sulcate.

"Dry sterile hills near Ham's Fork of the Colorado of the West. June.—Apparently biennial. [♃ ?] Stems about four or five inches high, intricately branched, the lower part usually buried in the sand. Leaflets 3–4 lines long. Flowers nearly white, with a tinge of dull purple." *Nutt.*—Perhaps not referred to its proper station in the genus. The flowers are apparently ochroleucous; but the root seems to be perennial.

** *Stipules cohering with each other.*

29. *A. Oreganus* (Nutt.! mss.): "dwarf and decumbent, canescent with appressed hairs; leaflets 17–21, broadly obovate or obcordate; stipules membranaceous; peduncle terminal, very short; spike somewhat capitate; bracts linear, more than half the length of the blackish villous calyx; teeth of the calyx about one-third the length of the tube.

"Plains of the Rocky Mountain range towards the sources of the Oregon. Several stems from one root, about 6 inches long, scarcely branched. Flowers as large as in A. Canadensis. Legumes not seen." *Nuttall.*

30. *A. flavus* (Nutt.! mss.): "somewhat canescent with appressed hairs, diffusely branched and decumbent; leaflets 2–5 pairs, oblong, or lanceolate-linear, rather acute, nearly glabrous above; stipules united opposite the leaves; peduncles longer than the leaves; spikes at length elongated and loose; calyx campanulate; the teeth subulate, nearly as long as the tube; legumes mostly included in the calyx, oblong-ovate, much compressed contrary to the sutures, with a broad and rather deep furrow below, partly 2-celled."

Hills of the central chain of the Rocky Mountains towards the Oregon. *Nuttall!*—Stems 6–8 inches long, rather slender. Spikes 10–15-flowered; the flowers rather bright yellow. Legumes about one-third of an inch long; the sutures closely approximated; the upper one a little prominent, forming a ridge along a broad shallow depression.

*** *Stipules not cohering with each other: spikes pedunculate: legumes sessile: root perennial.*

31. *A. Canadensis* (Linn.): tall and erect, canescent; stipules broadly lanceolate, acuminate, leaflets usually about 10 (rarely 12–14) pairs, elliptical or oblong, obtuse; peduncles about as long as the leaves; spikes oblong or elongated; bracts subulate, nearly as long as the calyx; flowers spreading, and partly reflexed; legumes ovate-oblong, terete, erect, coriaceous, glabrous, 2-celled, many-seeded; the upper suture prominent and acute.—*Willd. sp.* 3. *p.* 1274; *Pursh, fl.* 2. *p.* 472; *Ell. sk.* 2. *p.* 227; *Hook. fl. Bor.-Am.* 1. *p.* 152. A. Carolinianus, *Linn.; Michx.! fl.* 2. *p.* 66; *Pursh, l. c.; Ell. l. c.*

Along rivers, and on mountains? Canada! as far north as lat. 58°, to Louisiana! and west to the Oregon. June–Aug.—Stem 1–3 feet high, robust, somewhat branched. Leaflets ¾ to 1¼ inch long, usually glabrous above, sparsely pubescent beneath. Spikes 1–4 inches in length. Flowers about 8 lines long. Calyx more or less pubescent, often villous; the teeth subulate, less than one-third the length of the calyx. Legumes ¾ of an inch long, abruptly pointed, forming a compact head or spike, 10–15-seeded. Seeds reniform, compressed.—There can be little doubt that A. Canadensis and A. Carolinianus are one species. The leaflets are variable from 21 to 29; but we have never found so many as 41, the number assigned by Linnæus to A. Carolinianus. In our specimens from the State of New York, and from Quebec, the teeth of the calyx are scarce, one-fifth the length of the calyx; but in all others they are nearly one-third its length: in other respects there is no difference.

32. *A. spicatus* (Nutt.! mss.): "pubescent, erect; leaflets about 10 pairs, elliptic-oblong, obtuse; stipules ovate, acuminate; peduncles rather longer than the leaves; spikes oblong; bracts ovate, about the length of the pedicels; flowers reflexed; teeth of the calyx short, the upper ones widest; legumes cylindrical-oblong, terete, pubescent, with a short subulate point.

"Plains, near streams, in the Rocky Mountain range.—Nearly related to A. Canadensis; but differs in the legumes and bracts." *Nuttall.*

33. *A. tristis* (Nutt.! mss.): "somewhat pubescent, dwarf and decumbent; leaflets 8–10 pairs, obovate-oblong, glabrous above; stipules ovate-lanceolate; peduncles stout, shorter than the leaves; spikes oblong, dense, the flowers reflexed; bracts oblong-lanceolate, nearly as long as the blackish villous calyx; teeth of the calyx rather short, triangular; ovary villous, straight.

"Rocky Mountains, towards the sources of the Platte.—Allied to the two preceding species, particularly to the latter; but a dwarfish plant." *Nuttall.*

34. *A. leucophyllus:* canescent (the young leaves silvery), erect, tall; leaflets 14–18 pairs, oblong-linear, rather acute; stipules (small) subulate; peduncles twice as long as the leaves; spikes oblong, dense, the flowers erect-spreading; bracts subulate, a little longer than the pedicels; teeth of the calyx subulate, about one-third the length of the tube.

California, *Douglas!*—Whole plant whitish, with a very minute appressed pubescence. Leaflets approximated, about ¾ of an inch long, and 1–2 lines wide. Stipules 2–3 lines long, broad at the base. Spikes about 2 inches in length. Flowers as large as those of A. Canadensis. Vexillum oblong, a little exceeding the wings. Ovary glabrous. Legumes not seen.

35. *A. Purshii* (Dougl.): very hirsute; stems short, diffuse; leaflets 6–8 pairs, oblong; stipules lanceolate, acuminate; peduncles half as long as the leaves; flowers in loose heads, spreading; bracts linear-lanceolate, twice as long as the pedicels; calyx elongated, membranaceous; wings narrow, nearly as long as the vexillum; ovary subsessile, linear, very hirsute. *Hook. fl. Bor.-Am.* 1. *p.* 152.

Low hills of the Spokan River, Oregon, *Douglas.* June.—Whole plant very woolly-hirsute. Flowers yellow, 1½ inch long. Teeth of the calyx subulate, equal, half as long as the tube. Vexillum obovate; keel purple at the tip. Ripe legumes not known. *Hook.*

36. *A. glaber* (Michx.): stem nearly glabrous, erect; leaves few, distant; leaflets 15–23, linear-oblong and linear-lanceolate, somewhat hairy beneath; stipules almost none; spikes elongated, the flowers distant; bracts subulate, about as long as the pedicels; calyx tubular-campanulate, the teeth broad and very short; legumes oblong, acute at each end, compressed contrary to the

sutures, coriaceous, 2-celled, glabrous and reticulated.—*Michx.! fl.* 2. *p.* 66; *Nutt. gen.* 2. *p.* 99; *Ell. sk.* 2. *p.* 227; *DC. prodr.* 2. *p.* 293.

Sandy pine woods, North Carolina! to Florida!—Stem about 2 feet high. Leaflets 6–8 lines long, the lower ones obtuse or retuse. Stipules extremely minute, deciduous. Peduncles often twice the length of the leaves. Flowers spreading or reflexed, whitish, 7–8 lines long, slender. Calyx pubescent, about one-third the length of the corolla. Legume 1½ inch long, somewhat tumid.—Perhaps not properly referred to this section; as we are not certain that the flowers are ochroleucous. The subdivision *Dissitiflori*, of De Candolle's first section, is the only one to which it has much resemblance; and from this it is excluded by its curved legumes.

**** *Stipules not cohering: legumes stipitate: root perennial.*

37. *A. racemosus* (Pursh): erect or assurgent, somewhat pubescent; leaflets about 10 pairs, elliptical-oblong; peduncles longer than the leaves; flowers in dense spikes, nodding and somewhat secund; calyx oblong; the teeth subulate, more than half the length of the tube; legumes pendulous, elliptical-oblong, triquetrous, acute at each end, glabrous, 1-celled, the lower suture deeply inflexed.—*Pursh, fl.* 2. *p.* 740; *DC. prodr.* 2. *p.* 294. A. galegoides, *Nutt.! gen.* 2. *p.* 100, not of *Linn.*

Saline soils, from the banks of the White River to the Rocky Mountains; *Nuttall.* On the Platte, *Dr. James!*—About 2 feet high, minutely pubescent. Leaflets 6–8 lines long, rather acute. Stipules lanceolate, membranaceous. Spikes racemose, many-flowered; pedicels about 2 lines long. Calyx pubescent. Legume (including the stipe) about 15 lines long and 3 lines wide, the stipe scarcely one-third the length of the fertile portion.—A. galegiformis, *Linn.* differs in being glabrous; in the broader and much shorter teeth of the calyx; the 2-celled smaller and more ventricose legume; and in the much longer stipe.

38. *A. Drummondii* (Dougl.): tall and erect; stem, peduncles, and leaves clothed with soft hairs; leaflets 12–15 pairs, linear-oblong and oblong, narrowed at the base; stipules ovate, much acuminated; peduncles longer than the leaves; spikes elongated, loose; bracts subulate, longer than the pedicels; flowers pendulous and somewhat secund; teeth of the calyx subulate, about half the length of the tube; legumes recurved, cylindrical, glabrous, a little falcate, partly 2-celled; the upper suture obtuse, the lower deeply inflexed.—*Hook. fl. Bor.-Am.* 1. *p.* 153, *t.* 57.

Hudson's Bay, and on the Saskatchawan, *Douglas!* Grassy places by streams, near the sources of the Platte, *Nuttall!*—Stem 1–2 feet high, rather robust. Leaflets ½–1 inch long. Raceme 3–4 inches long. Legumes cartilaginous, when mature 2 inches in length; the stipe slender, and about one-fifth the length of the pod.—Very near the preceding species, but quite distinct.

§ 3. *Stipules more or less cohering with the petiole; the petiole not indurated and spinose.*—Podochreati, *DC.*

39. *A. mollissimus* (Torr.): silky-villous, nearly stemless, erect; leaflets 11–14 pairs, ovate-oblong; stipules triangular-ovate, partly adhering to the petiole; peduncles mostly longer than the leaves; flowers in long racemose spikes, somewhat erect; calyx cylindrical; the teeth subulate, half the length of the tube; legumes cylindrical-oblong, coriaceous, curved, glabrous, 2-celled, moderately grooved along each suture.—*Torr.! in ann. lyc. New-York*, 2. *p.* 178.

Sources of the Platte, near the Rocky Mountains, *Dr. James! Nuttall!*—Plant about one foot high; the pubescence of a yellowish color. Leaflets ¾ of an inch long. Peduncles and petioles stout. Flowers large, bright purple. Legume about ¾ of an inch long and 2½ lines wide, somewhat compressed contrary to the dissepiment, perfectly 2-celled.

‡ *Doubtful species.*

6/ 40. *A. miser* (Dougl.): stem weak; leaflets 5–10 pairs, linear, somewhat pubescent; stipules acuminate; calyx blackish. *Dougl. in Hook. fl. Bor.-Am.* 1. *p.* 153, note.

Low hills of Spokan River, 60 miles from its confluence with the Oregon. May-June. ♃ *Douglas.*—Of this plant Mr. Douglas sent home no specimens. Mr. Nuttall obtained what he considers the same species, but without fruit. The following is the short description which he communicated to us—"Root large, fusiform. Stem slender, almost prostrate, somewhat hirsute. Leaflets 7–8 pairs, obovate, acute. Stipules broadly ovate, united, opposite the leaves. Racemes few-flowered, about the length of the leaves. Bracts minute. Calyx hirsute with blackish hairs; the teeth acute and short. Flowers small, pale purplish.—Perhaps a Phaca."

84. OXYTROPIS. *DC. Astrag., & prodr.* 2. *p.* 275.

Calyx 5-toothed. Keel with a subulate point. Legume partly 2-celled by the introflexion of the upper or placental suture.—Perennial (very rarely annual) herbaceous or sometimes suffruticose plants, often acaulescent. Leaves unequally pinnate. Spikes pedunculate, axillary or radical.

§ 1. *Nearly stemless: stipules adnate to the petioles: leaflets not verticillate.*—Acaules, *DC.*

* *Flowers purple or white.*

1. *O. borealis* (DC.): nearly stemless; scape and stipules hispid with bristly hairs; the petioles with few hairs; leaflets elliptical-lanceolate, glabrous beneath, hairy above; scapes as long as the leaves; flowers capitate; bracts as long as the blackish very hispid calyx. *DC. prodr.* 2. *p.* 275; *Hook. fl. Bor.-Am.* 1. *p.* 145; *Hook. & Arn. bot. Beechey p.* 122.

β. bracts foliaceous, longer than the flowers; leaflets narrower. *Hook. & Arn. l. c.*

Kotzebue's Sound, *Beechey.*—The variety *β.* will perhaps prove to be a distinct species.

2. *O. Uralensis* (DC.): stemless, villous, scarcely silky; leaflets oblong-lanceolate; scapes longer than the leaves, and (with the calyx) hirsute-woolly; heads many-flowered, ovate, the flowers spreading; lower bracts longer than the calyx, the others equalling it in length; legumes somewhat distant, erect, ovate, acuminate, 2-celled. *DC. prodr.* 2. *p.* 279; *Hook. fl. Bor.-Am.* 1. *p.* 145; *Nutt. in jour. acad. Philad.* 7. *p.* 18, excl. syn. Astragalus Uralensis, *Linn.*

β. subsucculenta (Hook. l. c.): leaves nearly glabrous and somewhat fleshy.

γ. minor (Hook. l. c.): somewhat glabrous; flowers few.

Arctic America and Labrador, *Hooker.* Head-waters of the Missouri, *Nuttall.* *β.* Arctic sea-shore, *Dr. Richardson.* *γ.* Dry hills and prairies of the Rocky Mountains, *Drummond.*—A very variable species. *Hooker.*

3. *O. arctica* (R. Brown): nearly stemless, silky; leaflets opposite and alternate, oval-oblong; heads few-flowered, the flowers somewhat umbellate;

legumes erect, oblong, acuminate, and (with the calyx) clothed with black hairs. *R. Br.—Hook.! fl. Bor.-Am.* 1. *p.* 146.

α. subumbellata (Hook.! l. c.): heads 2–4 flowered.—O. arctica, *R. Br.! in app. Parry's* 1*st voy. p.* 278; *DC. prodr.* 2. *p.* 276.

β. minor (Hook.! l. c.): densely silky; flowers solitary.

γ. inflata (Hook.! l. c.): leaves and inflated legumes somewhat glabrous.

α. & *β.* Arctic islands and shores! *γ.* Highest summits of the Rocky Mountains.—Probably, as Hooker suggests, not distinct from the preceding species.

4. *O. foliosa* (Hook.): stemless, canescently hairy; leaflets numerous, approximated, ovate or oblong-ovate, rather acute; scapes longer than the leaves, hairy; heads broadly ovate (small); flowers crowded, spreading, the lower ones reflexed; bracts linear-lanceolate, shorter than the calyx; legumes rather remote, deflexed, cylindrical, acute, clothed (as well as the calyx) with blackish hairs. *Hook.! fl. Bor.-Am.* 1. *p.* 276.

Saskatchawan River! west to the Rocky Mountains, *Hooker.*—Leaves 3–4 inches long: leaflets 11–14 pairs, one-third of an inch long, clothed with appressed hairs. Scape about as long as the leaves; the pubescence spreading. Teeth of the calyx nearly as long as the tube. "Legumes about one inch long: stipe short, included in the calyx." *Hook.*

5. *O. Lamberti* (Pursh): cæspitose and stemless; leaflets numerous [5–8 pairs], linear-lanceolate, strigose, rather remote; common petiole very long; scape longer than the leaves; spikes oblong; bracts lanceolate, shorter than the silky calyx. *Nutt.—Pursh, fl.* 2. *p.* 740; *Nutt.! gen.* 2. *p.* 98; *DC. prodr.* 2. *p.* 277.

β. silky-pilose; leaflets 10–14 pairs, lanceolate; hairs of the calyx partly, and of the sheathing stipules wholly, dark.—O. Lamberti *β. Hook.! fl. Bor.-Am.* 2. *p.* 147.

γ. flowers larger, more remote, spreading.—O. Lamberti, *Sims, bot. mag. t.* 2147; *Lindl. bot. reg. t.* 1054. O. Lamberti *α. Hook. l. c.*

δ.? lanceolate leaflets (6–9 pairs) and stipules much less hairy; heads few-flowered, the flowers partly spreading; calyx with a mixture of blackish hairs.

ε. very dwarf, canescently woolly; the leaflets shorter and about 5 pairs; scape scarcely longer than the leaves; flowers capitate or nearly so; calyx densely woolly; bracts small and short; wings emarginate.—O. Lamberti *β.* leucophylla, *Nutt. mss.*

Woodless hills of the Missouri, from the Platte to the mountains, *Nuttall! Dr. James!* *β.* Saskatchawan! to the Rocky Mountains, *Douglas, Drummond.* *γ.* Canada (*Hook.*) *δ.* near Quebec, *Mrs. Percival!* *ε.* Plains of the Platte, *Nuttall.* May.–June.—Flowers bright purple.—Allied to O. grandiflora and O. ambigua, and not far removed, as Hooker thinks, from some states of O. Uralensis. We have not seen the mature legumes. According to Nuttall they are glabrous, black, small, somewhat terete, acuminate, and partly 2-celled.

6. *O. sericea* (Nutt.! mss.): "stemless, somewhat cæspitose, shining and whitish with appressed silky hairs; leaflets linear-oblong or lanceolate (those of the primary leaves elliptical and obtuse); scapes longer than the leaves; spikes short, elongated in fruit; bracts lanceolate, acuminate, shorter than the calyx; teeth of the calyx short and subulate; legumes somewhat cylindrical, acuminate, 2-celled, canescently pubescent."

Rocky Mountains. *Nuttall.*—Leaflets about ½ of an inch long. Wings emarginate. Scapes stout and rigid in fruit. Legumes (including the beak) nearly an inch long, coriaceous, compressed contrary to the sutures. Nearly related to O. Lamberti.

7. *O. Plattensis* (Nutt.! mss.): "stemless and somewhat cæspitose, canescently villous; leaflets oblong-elliptical or oblong-lanceolate, more or less acute; scape longer than the leaves; flowers in interrupted spikes; bracts subulate, shorter than the calyx; teeth of the calyx nearly half the length of the tube; wings dilated and emarginate.

"Plains of the Platte.—Differs from O. Lamberti in its shorter and wider leaflets, and in the longer teeth of the calyx." *Nuttall.*—This plant strongly resembles O. Lamberti β., and seems to differ chiefly in being whiter, more villous, and in the looser, interrupted spikes.

8. *O. Hookeriana* (Nutt. mss.): "stemless, somewhat cæspitose; pilose; leaflets linear-lanceolate, acute at each end; scapes longer than the leaves; flowers in somewhat interrupted spikes; bracts foliaceous, lanceolate-linear, nearly the length of the calyx; teeth of the calyx subulate, nearly as long as the tube; wings dilated and emarginate.

"Plains of the Platte. May–June.—Also allied to O. Lamberti; but the leaves are nearly green and loosely pilose, with the flowers (purple) smaller, and the calyx shorter and more deeply divided. It is also a more dwarf species." *Nuttall.*—We have seen no specimens of this plant.

9. *O. Lagopus* (Nutt.): nearly stemless, silky-lanuginous, rather dwarf; leaflets oblong-elliptical, about 4 pairs; flowers (5–6) capitate and somewhat umbelled; calyx cylindrical, densely clothed with white silky hairs, longer than the ovate bracts; the teeth subulate, half the length of the tube.—*Nutt.! in jour. acad. Philad.* 7. *p.* 17.

About the sources of the Missouri, *Mr. Wyeth!* (from *Nuttall.*)—Root long and thick. Caudex divided above into several short crowded branches, which bear tufts of whitish leaves. Leaflets about 3 lines long. Peduncles 1–2 inches long. Flowers closely approximated, violet-blue. Corolla scarcely exserted: vexillum obcordate; wings oblong; keel with a short straight rather obtuse point. Ovary glabrous. Ripe legumes not seen.—This species may prove to be a Phaca.

10. *O. nana* (Nutt.! mss.): "stemless, cæspitose, dwarf, canescently pilose; leaflets about 3 pairs, elliptical-oblong, somewhat acute; scapes longer than the leaves; head few-flowered; bracts ovate-lanceolate, shorter than the very woolly calyx; teeth of the calyx short; wings dilated and emarginate.

"Plains of the Platte in the Rocky Mountain range.—Scapes 2–3 inches high. Flowers large for the size of the plant, purple.—Distinguished from O. Lamberti, which it resembles in some respects, by its dwarf stature, and the small number of its leaflets." *Nuttall.*

11. *O. nigrescens* (Fischer): stem very short, divided above into several procumbent branches; leaflets 3–5 pairs, elliptical, rather acute, villous; stipules and calyx villous with blackish hairs; peduncle 2-flowered, as long as the leaves; legumes oblong, inflated, pubescent, 1-celled. *DC. prodr.* 2. *p.* 278; *Hook. fl. Bor.-Am.* 1. *p.* 147. Astragalus nigrescens, *Pall. Astrag. p.* 65, *t.* 63, ex *DC.*

Island of St. Lawrence in Behring's Straits.—Flowers bluish-purple, rather large. Keel with a small, but evident point. *DC.*—A native also of Eastern Siberia.

* * *Flowers ochroleucous.*

12. *O. campestris* (DC.): leaflets many pairs, lanceolate, silky; scapes often decumbent, usually longer than the leaves; spikes capitate (sometimes elongated); flowers erect; bracts a little longer than the calyx; legumes erect, oblong-ovate, inflated, rostrate, pubescent, half 2-celled.—*DC. prodr.* 2. *p.* 278; *Richards.! app. Frankl. journ. ed.* 2. *p.* 28; *Hook.! fl. Bor.-Am.* 1. *p.* 147.

β. *speciosa:* leaflets broader and more silky; flowers larger.—O. campestris γ. sulphurea, *Hook.! l. c.*, not of *DC.?*

γ. *spicata* (Hook.! l. c.): spikes elongated; flowers more remote.

δ. *glabrata* (Hook. l. c.): leaflets almost glabrous and somewhat succulent.

ε. *melanocephala* (Hook.! l. c.): smaller; calyx villous with blackish hairs.

α. β. & γ. British America, west to the Pacific! δ. & ε. Arctic and Subarctic America!—Leaflets variable in number and breadth, usually 8–10 pairs, lanceolate and approximated, in γ. & δ. rather remote. Scapes 4–12 inches long, mostly longer than the leaves. Legumes about an inch long, terminated with a long oblique ensiform point.—This species is a native also of the mountains of Europe. Hooker considers his var. sulphurea (β.) as probably identical with O. sulphurea, *Ledeb & Fisch.* (O. campestris γ. sulphurea, *DC.*); but our specimen of that plant, received from Dr. Fischer, has the leaflets much narrower, more acute, and closely approximated.

13. *O. viscida* (Nutt.! mss.): "stemless, cæspitose, hairy and viscid; leaflets numerous (16–29 pairs), oblong-lanceolate, somewhat acute; peduncles longer than the leaves; stipules pilose, membranaceous, with a long acumination; spikes subcylindrical; bracts as long as the calyx; teeth of the calyx subulate, about the length of the tube; legumes short, terete, pubescent, acuminate.

"Rocky Mountains, near the sources of the Oregon.—Scapes about 14 inches high. Flowers rather smaller than in O. Uralensis." *Nuttall.*

14. *O. multiceps* (Nutt.! mss.): nearly stemless, cæspitose, canescently silky; caudex divided above into numerous heads; leaflets 3–4 pairs, elliptical-lanceolate; stipules adnate to the petiole, ovate, acute, membranaceous; scapes longer than the leaves, 2–3-flowered; bracts ovate; legumes ovate, acuminate, wholly included in the inflated calyx, half 2-celled."

Summit of lofty hills in the Rocky Mountain range, towards Lewis's River.—*Nuttall!* Plant forming beautiful silvery tufts about 3 inches high. Leaflets about ¼ of an inch long. Calyx at length somewhat glabrous; the teeth subulate, ½ the length of the tube. Legumes compressed contrary to the sutures, pubescent, about 8-seeded.—A well marked species, but perhaps not referred to its proper section, as the flowers are unknown. The legume, however, is truly that of Oxytropis.

§ 2. *Acaulescent: leaflets mostly verticillate or fascicled.*—Verticillares, *DC.*

15. *O. splendens* (Dougl.): stemless; leaflets verticillate in threes and fours, lanceolate, very acute, silky; scapes longer than the leaves, clothed (as likewise the petioles) with spreading hairs; flowers somewhat remote, erect-spreading; calyx very hairy, white; legumes ovate, partly 2-celled, erect, acuminate, hairy, much longer than the calyx.—*Hook.! fl. Bor.-Am.* 1. *p.* 147.

α. *vestita* (Hook. l. c.): very hairy; bracts much longer than the calyx.

β. *Richardsonii* (Hook.! l. c.): less hairy; bracts scarcely as long as the calyx.—O. oxyphylla, *Richards. app. Frankl. jour. ed.* 2. *p.* 28, not of *Pall.*

British America, from the Saskatchawan and Red Rivers, north to Bear Lake and west to the Rocky Mountains, *Douglas, Richardson!*—Leaflets 5–10 lines long, those of the primary leaves often smaller and nearly ovate, sometimes 5–6 in a whorl. Scapes 8–12 inches high. Spike 2 inches long. Flowers large, bright blue. Legume pointed with a long straight beak.

§ 3. *Stems elongated: stipules not adnate to the petiole: leaflets not verticillate.*—Caulescentes, *DC.*

16. *O. deflexa* (DC.): stem ascending, somewhat hairy; leaflets ovate-lanceolate, pubescent; peduncles much longer than the leaves; legumes pendulous, hairy, 1-celled, opening widely at the summit. *DC. prodr.* 2. *p.* 280; *Richards. app. Frankl. journ. ed.* 2. *p.* 28; *Hook. fl. Bor.-Am.* 1. *p.* 148. Astragalus deflexus, *Pall. in mem. acad. St. Petersb.* 1776, *t.* 15; *L'Her. stirp. t.* 80, ex *DC.* A. hians, *Jacq. ic. rar. t.* 252, ex *DC.* A. parviflorus, *Lam.* A. retroflexus, *Pall. Astrag. t.* 27.

β. *sericea:* leaves silky-villous.

Banks of the Saskatchawan, *Richardson*, *Drummond.* β. Rocky Mountains near streams, *Nuttall!*—Flowers very small. Fruit large. *Hook.* β. Branching from the base. Scapes 6–12 inches long. Spikes subglobose or ovate. Flowers about ⅓ of an inch long. Calyx villous, with a mixture of blackish hairs; teeth subulate, nearly as long as the tube, and spreading. Corolla a little exceeding the calyx, pale dull purple, mixed with white. Keel with a short but acute point. Legume ¾ of an inch long, very acute, sessile.

35. PHACA. *Linn.; DC. Astrag., & prodr.* 2. *p.* 273.

Calyx 5-toothed or 5-cleft; the 2 upper teeth often a little remote from each other. Keel obtuse. Legume mostly turgid or inflated, 1-celled; the upper or placental suture somewhat tumid.—Mostly perennial herbs, with axillary pedunculate racemes. Legumes when mature often resupinate by the twisting of the pedicels.

§ 1. (an gen.?) *Leaves palmately trifoliolate. (Acaulescent, densely cæspitose: stipules scarious, united beneath the petiole: flowers sessile at the base of the leaves, or on short scapes.)*—OROPHACA.

1. *P. cæspitosa* (Nutt.): stemless, cæspitose, silky-pubescent and silvery; root fusiform; caudex very short; leaves on long petioles; leaflets lanceolate, acute at each end; stipules (large) ovate, very thin and scarious; flowers (ochroleucous) aggregated and sessile at the base of the leaves; calyx cylindrical, with short subulate teeth; legume silky-villous, oblong-ovate, terete, included in the calyx.—*Nutt! gen.* 2. *p.* 98; *DC. prodr.* 2. *p.* 274; *Hook. fl. Bor.-Am.* 1. *p.* 443, *t.* 55. Astragalus triphyllus, *Pursh! fl.* 2. *p.* 740, not of *Pallas.*

Dry gravelly hills of the upper part of the Missouri, *Bradbury! Nuttall!* and on the Saskatchawan, *Richardson*, *Drummond.* May.—Root thick and perpendicular, with numerous very short heads at the summit. Petioles 2–3 inches long: leaflets (sometimes 5, ex *Nutt.*) nearly an inch long, attenuate at the base, clothed with a short shining closely appressed pubescence. Flowers rather large, aggregated in a dense cluster which is closely sessile on the summit of the caudex. Bracts like the stipules. Calyx at length a little inflated and somewhat campanulate.

2. *P. argophylla* (Nutt. mss.): "stemless, cæspitose, densely silky-villous and silvery; leaflets short, cuneate-oblanceolate, rather obtuse; stipules scarious, bifid and acute; flowers (ochroleucous) densely aggregated and sessile at the base of the leaves; teeth of the calyx subulate, nearly as long as the tube; legumes short and roundish, densely villous.

"Summits of mountains on the upper waters of the Platte.—A very curious species, nearly related to P. cæspitosa, but with broader and shorter leaflets, smaller flowers, &c. The whole plant is silvery-white and as soft as cotton to the touch: the young legumes appear like pellets of cotton." *Nutall.*

3. *P. sericea* (Nutt.! mss.): "dwarf, depressed, densely and canescently silky-villous; caudex diffusely branched; flowering branches very short, thickly clothed with the imbricated scarious lacerated and very hairy stipules; leaves small, on rather slender petioles; leaflets cuneate-oval or oblanceolate; (flowers purple, very numerous); peduncles filiform, a little longer than the leaves, 2–6-flowered; segments of the calyx subulate, about the length of the tube; legume (young) small, acuminate, many-seeded, villous."

"On the high hills of the Platte near the Rocky Mountains.—A very elegant and curious species, forming a dense tuft, spreading from a few inches to a foot or more in diameter, densely clothed in every part with a silvery villous pubescence. Leaves crowded: leaflets scarcely one-fourth of an inch long. Stipules large, very thin, villous on the outside, and closely imbricated, so that the branches appear to be clothed with a thick woolly covering. Bracts subulate. Flowers small, fine purple." *Nuttall.*

§ 2. *Leaves unequally pinnate, rarely 1–3-foliolate.*—PHACA proper.

* *Legumes large, membranaceous, much inflated.*

† Flowers ochroleucous.

4. *P. megacarpa* (Nutt.! mss.): almost stemless, at length nearly glabrous; leaves on long petioles; leaflets 4–6 pairs, roundish, slightly petiolulate, rather distant and often somewhat alternate; racemes few- (3–6-) flowered, much shorter than the leaves; flowers very large; calyx tubular, the lanceolate-subulate teeth rather shorter than the tube; legumes very large and much inflated, ovate, acuminate, glabrous, nearly sessile.

"Plains of the Rocky Mountains.—a rather robust species, with numerous short subterranean stems an inch or two in length, somewhat toothed with the short persistent stipules; somewhat allied to Astragalus longiflorus, but a true Phaca; the pods never pulpy, and the petioles not adnate to the petiole." *Nuttall.*—About a span high. Leaves a little succulent, at first slightly strigose: leaflets about half an inch in breadth, broadly ovate or roundish oval, often emarginate. Flowers nearly an inch in length: vexillum emarginate. Legumes 2½ inches long and an inch in width when mature, many-seeded.

5. *P. Nuttallii:* "stem decumbent, low, sparingly branched, pubescent or nearly glabrous; leaves on short petioles, canescently pubescent when young; leaflets approximated, 15–19 pairs, linear-oblong, somewhat narrowed at the base, obtuse, often emarginate, villous-tomentose on the midrib beneath; stipules membranaceous, triangular, acuminate; peduncles longer than the leaves; raceme spicate; calyx nearly glabrous, the teeth subulate, about half the length of the tube; legume large, inflated, at first pubescent, ventricosely carinate, acuminated with the pointed styles, sessile; flowers ochroleucous, the keel tipped with a pale purple spot."—P. inflata. *Nutt.! mss.*, not of *Gillies.*

"Borders of woods near the sea, St. Barbara, California. April.—Allied to P. trichopoda, but with a somewhat different habit, large flowers, and sessile pods." *Nuttall.*—Apparently near P. densifolia, *Smith;* a Californian species which we know only from the description, and which Mr. Nuttall seems not to have met with; but that species is said to have reddish flowers, &c. The raceme or spike is oblong, rather compact, with the flowers at length reflexed. The calyx when young is pubescent with blackish hairs.

6. *P. trichopoda* (Nutt.! mss.): "slightly pubescent; stem stout and erect, branching; leaves subsessile; leaflets 16–20 pairs, approximated, linear-

oblong, obtuse, slightly petiolulate; stipules minute, triangular; racemes oblong, spicate, many-flowered; peduncles much longer than the leaves; calyx pubescent with blackish hairs, with very short subulate teeth, at length withering; legumes elliptical-ovoid, obtuse at each end, not flattened, glabrous, raised on a long filiform stipe.

"Borders of woods near the sea, St. Barbara, California. April.—A robust plant, about 3 feet high, nearly glabrous when old. Flowers rather small, ochroleucous. Stipe almost as long as the pod.—Allied to P. alpina, but with more conspicuous teeth to the calyx, a different pod, &c." *Nuttall.*

7. *P. canescens* (Nutt.! mss.): "tomentose-canescent; leaflets 10–15 pairs, small, oval or oblong, obtuse, scarcely petiolulate; stipules membranaceous, very small, triangular-subulate; raceme many-flowered, rather loose, on peduncles twice the length of the leaves; the flowers nodding; teeth of the calyx subulate, rather shorter than the tube; vexillum elongated; legumes large inflated, obtuse, slightly puberulent, raised on a slender stipe.

"With the preceding, but on dry plains.—Scarcely a foot high, with smaller and less crowded leaflets than P. trichopoda, which it resembles in most respects: the flowers are larger, the peduncles longer, &c. The filiform stipe is about twice the length of the calyx." *Nuttall.*

8. *P. frigida* (Linn.): erect, nearly glabrous, a little branched; leaflets 4–5 pairs, oblong-ovate, somewhat hairy beneath and on the margins; stipules large, foliaceous, ovate-oblong, ciliate; calyx pubescent on the margin; legumes stipitate, oblong, inflated, membranaceous. *Hook. fl. Bor.-Am.* 1. *p.* 140. P. frigida & alpina, *Linn. & auct.*

β. Americana (Hook. l. c.): legumes glabrous.—P. frigida, *Richards. app. Frankl. journ. ed.* 2. *p.* 28.

γ. littoralis (Hook. l. c.): calyx and legumes hirsute with black hairs; stem lower; leaflets canescently pubescent beneath.

β. Woody regions of the Rocky Mountains, lat. 52°–56°, to Slave Lake, *Richardson, Drummond.* γ. Arctic shores, Mackenzie River, and Behring's Straits. *Hook.*—Racemes many-flowered. Stipe of the legume scarcely longer than the calyx.

† † Flowers purplish or white.

9. *P. densifolia* (Smith): stem decumbent, branching, glabrous; leaflets 14–16 pairs, oblong-oval, emarginate, villous-tomentose (as well as the rachis) beneath; peduncles and calyx villous; raceme compact, many-flowered; legume membranaceous, ovate, very large, inflated, nearly glabrous, reticulated. *Hook. & Arn.—Smith, in Rees, cycl.; DC. prodr.* 2. *p.* 274; *Hook. & Arn. bot. Beechey, p.* 138.

California, *Menzies, Beechey.*—Flowers nodding, reddish. Peduncles the length of the leaf. Leaflets obovate. *DC.*—We have never seen this species.

10. *P. neglecta:* nearly glabrous; stem erect, branching; leaflets 5–8 pairs, elliptical petiolulate, minutely puberulent with appressed hairs beneath; stipules triangular-ovate, minute; peduncles about the length of the leaves; racemes oblong, many-flowered, at length rather loose; the flowers (white) reflexed; calyx tubular-campanulate, pubescent (as well as the pedicels) with black hairs, the subulate teeth much shorter than the tube; legume sessile, glabrous, coriaceo-membranaceous, globose-ovate, pointed, very turgid, flattened on the upper side and deeply grooved by the introflexion of the placental suture.

Gravelly banks of rivers and lakes, throughout the Western part of New-York from Onondaga Lake to the Falls of Niagara, *Mr. Cooper! Dr. J. Smith! Dr. Sartwell! Dr. Kinnicutt! Mr. J. Carey!* Also Wisconsin, *Mr. Lapham!* June–July.—Plant 1–2 feet high, rather slender: stem terete, even. Leaflets about three-fourths of an inch long, obtuse, sometimes emarginate, beneath a little grayish with a very minute appressed pubescence. Raceme with 10–20 flowers, nearly the size of those of Astragalus Canadensis, pure white. Legumes about ¾ of an inch in length, somewhat flattened posteriorly; the dorsal suture slightly introflexed; the thickened and spongy ventral suture rather deeply, so that the fruit is imperfectly 2-celled. Seeds numerous, small.—Greatly resembles Astragalus Canadensis in habit and foliage, with which it has often been confounded. A true Phaca; but the placental suture is introflexed as in Oxytropis.

11. *P. astragalina* (DC.): minutely hairy or somewhat glabrous; stem short, ascending; leaflets 8–10 pairs, oval, slightly petiolulate, minutely hirsute with appressed hairs beneath; stipules ovate, foliaceous, nearly free, the lower ones scarious; peduncles at length longer than the leaves; flowers [violet] in a somewhat capitate raceme, spreading; the teeth of the calyx rather acute, almost as long as the tube; legumes, pendulous, elliptical, inflated, raised on a short stipe, minutely hirsute (as well as the calyx, pedicels, &c.) with blackish hairs.—*DC.! Astrag. p.* 52, *& prodr.* 2. *p.* 274; *Richards.! app. Frankl. journ. ed.* 2. *p.* 28; *Hook.! fl. Bor.-Am.* 1. *p.* 144. Astragalus alpinus, *Linn.; Pursh, fl.* 2. *p.* 472. A. montanus, *Jacq. fl. Austr. t.* 181. P. Andina, *Nutt.! mss.*

Newfoundland and Labrador to the Rocky Mountains and Kotzebue's Sound, and throughout Artic America, *Drummond! Richardson! Parry!* Also near Montreal, *Dr. Holmes!* and Quebec, *Mrs. Percival!* Alpine summits of the Rocky Mountains, near the confines of perpetual snow (Thornburg's Pass), about lat. 43°, *Nuttall!* A native also of the Alps of Europe, and Siberia.—Plant 3–8 inches high: the stem often wholly subterranean. Flowers 1-12: petals deep violet at the summit.—Mr. Nuttall's specimens of P. Andina are in fruit only, and the short stems are wholly subterranean and clothed with the persistent united scale-like stipules; but some of our alpine forms of the European P. astragalina are entirely similar.

12. *P. elegans* (Hook.): nearly glabrous; stem somewhat branching, erect or assurgent, angled; leaflets 5–7 pairs, oblong, obtuse, cuneate at the base, glabrous above, clothed with minute appressed hairs beneath; stipules ovate, acute, somewhat connate at the base; raceme compact, elongating in fruit, the peduncles longer than the leaves; flowers bright and deep purplish blue; legumes sessile, elliptical, inflated, membranaceous, apiculate, velvety with black hairs, 3–5-seeded. *Hook. fl. Bor.-Am.* 1. *p.* 144.

β. minor (Hook. l. c.): stem ascending, smaller; raceme shorter.

Prairies in the Rocky Mountains: *β.* on the higher summits, *Drummond.*—The plant in the plains is 12–18 inches high; the leaflets nearly an inch long, somewhat glaucous beneath; the blackish legumes ¾ of an inch long, densely hairy. The var. *β.* is much smaller, with rounded racemes, more spreading flowers, and approaches P. astragalina; but the flowers are smaller and of a deeper color, and the leaflets are narrower. *Hook.*

13. *P. debilis* (Nutt.! mss.): "somewhat pubescent; stem slender, nearly simple, decumbent; leaves on rather long petioles; leaflets 8–11 pairs, cuneate-oblong, somewhat truncate or emarginate at the apex, petiolulate, minutely hirsute with appressed hairs beneath; stipules, triangular-oblong, acuminate, slightly adnate to the base of the petiole; peduncles longer than the leaves; flowers (purplish) somewhat capitate; calyx pubescent with grayish hairs, the subulate teeth about the length of the tube; vexillum deeply emarginate: legume. . . . .

"Plains of the Rocky Mountains, near streams.—A slender species, quite smooth below. Leaflets about one-fourth of an inch in length; those of the lowest leaves much smaller and glabrous. Flowers (nearly as large as in P. astragalina) in close 10–15-flowered heads, which at length elongate into short spikes, pale purple." *Nuttall.*—This may perhaps be P. elegans *β.* minor of Hooker; but that species is said to have the flowers considerably smaller than those of P. astragalina, and of a far deeper color. The fruit is unknown.

14. *P. Aboriginorum* (Hook.): softly canescently pubescent; stem erect, somewhat branched, striate; leaves mostly sessile; leaflets about 5 pairs, oblong-lanceolate or linear, rather obtuse, sessile; stipules, ovate, membranaceous, the lowermost united, rather large; peduncles twice the length of the leaves; racemes oblong, 15–20-flowered (flowers white tinged with blue); legumes glabrous, obliquely elliptical, inflated, membranaceous, acute, raised on a slender stipe about twice the length of the calyx.—*Hook.! fl. Bor.-Am.* 1. *p.* 143, *t.* 66. Astragalus Aboriginorum, *Richards.! app. Frankl. journ. ed.* 2. *p.* 28.

Lake Winnipeg to the Rocky Mountains, and north to Bear Lake in lat. 66°, *Richardson! Drummond!*—Root long, yellowish, similar to that of Glycyrrhiza, from which rise numerous almost simple stems, a foot high. Leaflets about an inch long, often alternate, rarely somewhat verticillate, villous-canescent with a close very soft white pubescence. Racemes rather loose; the pedicels ascending or a little spreading, recurved in fruit. Calyx and pedicels hirsute with blackish or brownish hairs. Legumes canescent when young, at length glabrous; straight along the upper suture, which is slightly introflexed, curved along the dorsal suture, pointed. "The Creeks and Stone Indians gather its roots in the spring as an article of food." *Richardson.*

15. *P. glabriuscula* (Hook.): glabrous or slightly hairy; stem erect, nearly simple, striate; leaflets 5–6 pairs, linear-lanceolate, rather acute; stipules ovate, acute, the lowermost connate, rather large; legumes (not mature) on a rather long stipe, lanceolate-falcate, compressed, membranaceous, glabrous. *Hook. fl. Bor.-Am.* 1. *p.* 144.

Vallies of the Rocky Mountains, *Drummond.*—"General aspect very similar to the preceding, of which perhaps it may be a variety; but it is almost entirely glabrous, smaller, the fruit more falcate,' &c. *Hook.*

16. *P. Douglasii:* very slightly hairy: stem (erect?) flexuous, angled and striate; leaflets 10 13 pairs, narrowly elliptical or linear-oblong, obtuse, slightly petiolulate, beneath (especially the midrib and margins) minutely hairy; stipules very small, triangular; peduncles about as long as the leaves; racemes few- (6–10-) and loosely-flowered; calyx campanulate, the teeth acute and shorter than the tube; legumes (immature) sessile, ovate, pointed, membranaceous, inflated, the upper suture a little introflexed.

California, *Douglas!* Upper leaves sessile. Leaflets rather thick and rigid, ½–¾ of an inch long, about 2 lines broad. Flowers about as large as in P. Aboriginorum, white? Calyx minutely hirsute with whitish hairs. Legume (young) about an inch in length, puberulent, with appressed hairs.—We have not seen the full-grown fruit.

17. *P. longifolia* (Nutt. mss.): canescently puberulent; stem erect, slender, branching; lower petioles short, pinnately 3–5-foliolate, with narrowly linear leaflets; the upper ones elongated and filiform, mostly leafless; stipules lanceolate-subulate, the lowermost united, the upper ones distinct; racemes on filiform peduncles shorter than the petioles, 7–10-flowered; legumes membranaceous and much inflated (large spotted), ovate-globose, stipitate, glabrous. —Psoralea longifolia, *Pursh, fl.* 2. *p.* 741; *DC. prodr.* 2. *p.* 520. Orobus longifolius, *Nutt. gen.* 2. *p.* 95. O.? longifolius, *DC. l. c. p.* 480; *Torr.! in ann. lyc. New York,* 2. *p.* 180.

Sand-hills on the banks of the Missouri, *Bradbury! Nuttall;* and along the Platte to the Rocky Mountains, *Nuttall, Dr. James!* May.—Roots filiform, creeping. Leaflets of the lower leaves an inch or more in length: the upper petioles often a span long, commonly destitute of leaflets, or somewhat foliaceous at the apex, occasionally 3–5 foliolate.—Mr. Nuttall compares the leaves to those of Indigofera filifolia. He states the flowers (which do not exist on our specimens) to be pale red. The mature pods are about an inch and a half in length, borne on a short stipe about the length of the calyx. On page 300 of this work, this species has been inadvertently introduced under the original name of Pursh. The mature fruit was first collected by Dr. James. The plant is similar in habit to several species of Mr. Nuttall's genus Homalobus.

* * *Legumes coriaceous or cartilaginous.*

† Flowers white or purplish.

18. *P. pectinata* (Hook.): canescently puberulent or nearly glabrous; stems thick, branching, ascending, striate; leaves subsessile, rigid; leaflets 6–10 pairs, very narrowly linear, rather acute, persistent (not articulated with the rachis); stipules triangular-acuminate, partly united opposite the petioles; racemes about 18-flowered, longer than the leaves, on thick peduncles; flowers large (white), at length recurved; legumes sessile, ovoid, pointed, turgid, thick and cartilaginous, transversely rugose, the upper suture much thickened.—*Hook.! fl. Bor.-Am.* 1. *p.* 142, *t.* 54.

β. stem more flexuous; leaves filiform. *Hook.! l. c.*

Pastures of the Saskatchawan, *Drummond! Douglas!* Also in plains along streams in the Rocky Mountains, near the sources of the Platte, *Nuttall!*—Stems about a foot high, naked below, very leafy above, fistulous. Leaves pectinately divided rather than pinnate: leaflets perfectly continuous with the rachis, which is sometimes forked at the apex instead of bearing a terminal leaflet. Flowers three-fourths of an inch in length. Calyx cylindraceous; the teeth very short. Vexillum obovate-oblong, much longer than the other petals. Legumes 12–14-seeded.

19. *P. collina* (Hook.): erect or diffuse, hairy; leaflets 9–11 pairs, narrowly linear, obtuse, attenuate at the base into a short partial petiole; stipules very small, oblong, acuminate; peduncles twice the length of the leaves; racemes oblong, dense, with the flowers refracted; calyx tubular, densely hirsute; vexillum about the length of the wings; legumes (immature) linear, pubescent, stipitate, deflexed. *Hook. fl. Bor.-Am.* 1. *p.* 141.

On the subalpine range of the Blue Mountains, in dry soils, *Douglas.* June–July.—"Stem a foot or more high. Leaflets remote, an inch long, obtuse or retuse. Corolla white, apparently with a large purple spot on each petal.—Remarkable for its narrow linear leaves, for the sudden deflexion of the flower from the summit of the erect pedicel, for the elongated tube of the calyx, and for the short vexillum." *Hook.*—We have not seen this species. It perhaps belongs to Mr. Nuttall's genus Homalobus.

20. *P. podocarpa* (Hook.): canescent, much branched, diffuse; stem and branches striate; leaflets 6–9 pairs, broadly linear, obtuse; stipules ovate, acuminate, very small: peduncles longer than the leaves; racemes loose; legumes oblong, coriaceous, compressed, hirsute with appressed hairs, acuminate, attenuate at the base into a long stipe; the sutures much thickened, the upper one straight, the lower arcuate. *Hook. l. c. p.* 142.

Dry barren and sandy grounds at the Great Falls of the Oregon; rare, *Douglas.*—June–Aug.—"This stands marked in Mr. Douglas's collection as a new genus, and there is indeed something remarkable in the appearance of its legumes, compressed as they are, and thickened at the sutures both above and below, and borne upon a stalk as long as themselves. . . . Flowers middle-sized, white. Leaflets remote, 6–7 lines long, glabrous above. Legume (not mature) about an inch long." *Hook.*—Probably a species of Mr. Nuttall's genus Homalobus.

21. *P. elongata* (Hook.): stem erect, (sometimes flexuous) angled, pubescent, slightly branched; leaflets 8–10 pairs, oblong-cuneiform, retuse, canescent beneath; stipules very small, acuminate from a broad base, the lower ones united; peduncles much longer than the leaves; racemes elongated, loose; calyx silky; legumes sessile, coriaceous, cylindraceous, curved, acute. *Hook. fl. Bor.-Am.* 1. *p.* 140.

Plains of the Saskatchawan, *Richardson*, *Drummond.*—Stems numerous, 12–18 inches high, strict. Leaflets about an inch long, glabrous above, canescent beneath, the younger ones silky. Peduncles about a span long, strict, twice or thrice the length of the leaves. Flowers small, white or ochroleucous, purple on the keel, spreading, at length reflexed. Legume coriaceo-cartilaginous, hirsute; the sutures very slightly introflexed. *Hook.*

22. *P. flexuosa* (Hook.): stem decumbent, flexuous, sparingly branched; leaflets 6–9 pairs, linear-oblong, obtuse, glabrous above, clothed with appressed hairs beneath; stipules very small, acuminate from a broad base, the lower ones united; peduncles longer than the leaves; racemes elongated, loose; calyx somewhat silky; legumes sessile, coriaceous, cylindraceous, straight, acute. *Hook. l. c.*

Abundant on elevated and dry fertile soils of the Red and Assinaboin Rivers, lat. 50°, *Douglas.* "Very similar to the preceding, with which it should perhaps be united; but the leaves are smaller and narrower, 'the flowers purplish and very fragrant,' and the legumes not only smaller, but straight." *Hook.*

23. *P. parviflora* (Nutt. mss.): "canescently pubescent, at length nearly glabrous; stem erect; leaflets 5–7 pairs, linear-oblong, obtuse, petiolulate; stipules oblong, obtuse, distinct; the upper ones almost linear; peduncles much longer than the leaves, the spikes oblong; calyx hirsute with black hairs; flowers dull-purple, the wings about the length of the keel; legumes on a short stipe, at first hirsute.

"Vallies of the Rocky Mountains.—Nearly allied to P. oroboides and P. brachytropis; perhaps scarcely distinct from the latter; the flowers about half the size of those of P. oroboides. Stem about a foot high." *Nuttall.*—Calyx thickly hairy with white and black hairs intermixed. We have not seen the fruit.

24. *P. pauciflora* (Nutt. mss.): "nearly glabrous; stem slender, even; leaves on long petioles; leaflets 8–10 pairs, lanceolate-linear, acute; the rachis grooved; stipules partly united, acute; peduncles few- (2–3-) flowered, shorter than the leaves; legumes very small, roundish-ovate, acuminate.

"Plains of the Rocky Mountains, near streams.—Calyx pubescent with blackish hairs; the teeth acute, about the length of the short tube. I have seen but a single specimen, and that not in flower." *Nuttall.*

25. *P. parvifolia* (Nutt. mss.): small, canescent, somewhat cæspitose; stem very short; leaves on long petioles; leaflets 5–8 pairs (very small), lanceolate-linear, mostly acute; the rachis flattened and slightly-winged; peduncles slender, longer than the leaves; racemes short, few- (5–7-) flowered; calyx short, pubescent with blackish hairs, the teeth acute, a little shorter than the tube; legumes pubescent, sessile, terete and somewhat boat-shaped, acute.

"Rocky Mountains towards the sources of the Platte.—A small and slender canescent species, with purple flowers. Lower stipules united; the upper ones smaller, triangular-ensiform." *Nuttall.*—We have seen no specimens of this or the preceding species.

26. *P. bisulcata* (Hook.): minutely pubescent; stem stout, striate, ascending or erect; leaves nearly sessile; leaflets 11–13 pairs, elliptical, somewhat petiolulate, clothed beneath with minute appressed hairs; stipules ovate-lanceolate, acute, distinct; racemes pedunculate, spicate, closely-flowered, much elongated; the flowers nodding (purple); legumes linear, nearly cylindrical, stipitate, at length glabrous, nodding, with a deep furrow on each side of the superior suture.—*Hook.! fl. Bor.-Am.* 1. *p.* 145.

Plains of the Saskatchawan, *Drummond;* and near the northern sources of the Platte, *Nuttall!*—A large and showy species; the stem 1–3 feet high, scarcely branched; the racemes, including the peduncle, at length 6–10 inches long; with large, crowded, rich purple flowers. Legumes nearly an inch long, somewhat terete, narrow, between membranaceous and cartilaginous, on a stipe about the length of the calyx, 5–6 seeded, with 2 deep furrows on the upper side, one each side of the suture, which is not at all introflexed.

† † **Flowers ochroleucous.**

27. *P. villosa* (Nutt.): very hirsute; stem short, procumbent; leaves subsessile; leaflets 4–8 pairs, rather distant, oval, oblong, or obovate, petiolulate, nearly glabrous above; stipules lanceolate, foliaceous; racemes somewhat capitate, 8–20-flowered, on peduncles shorter or sometimes a little longer than the leaves; segments of the calyx linear-subulate, longer than the tube; legumes very densely villous with white hairs, sessile, inflated, oblong, acute, subtriangular, arcuate.—*Nutt.! gen.* 2. *p.* 97; *Ell. sk.* 2. *p.* 220; *DC. prodr.* 2. *p.* 274. Astragalus villosus, *Michx.! fl.* 2. *p.* 67; *Pursh, fl.* 2. *p.* 478.

Dry sandy soils and pine forests, S. Carolina! to Florida! (and on the Missouri to near its sources, *Nuttall.*) April–May.—Plant 4–6 inches high; the ascending stem short or sometimes almost none. Leaflets 3–4 lines long, sometimes emarginate. Head of flowers close, on a long peduncle which sometimes exceeds the leaves; bracts lanceolate-subulate, somewhat persistent. Legumes rather erect, 8–10 lines long, 10–14-seeded, the lower suture a little introflexed.

28. *P. lotiflora* (Hook.): canescently hairy; stems numerous from one root, very short, diffuse; leaves on rather long petioles; leaflets 4–6 pairs, rather distant, oblong, obtuse, sessile, at length almost glabrous above; stipules ovate, acuminate; raceme capitate, 3–9-flowered, on peduncles shorter or sometimes longer than the leaves (flowers small); teeth of the calyx subulate, longer than the tube and somewhat shorter than the petals; legumes canescent, sessile, semi-ovate, pointed.—Astragalus? (an Phaca?) lotiflorus, *Hook. fl. Bor.-Am.* 1. *p.* 153.

On the Saskatchawan, *Drummond;* and Rocky Mountains, *Nuttall!*—Plant 3–4 inches high: stems short or almost none, crowded. Bracts subulate, persistent. Flowers about half the size of those of P. villosa, to which it is allied, as remarked by Hooker.—Mr. Nuttall, having obtained specimens in fruit, has confirmed Hooker's opinion that the plant belongs to this genus. The legumes are about half an inch in length, turgid, straight along the upper suture, the lower much curved.

29. *P. pygmæa* (Nutt.! mss.): "silvery-canescent, nearly stemless; leaves on rather long petioles; leaflets 3–5 pairs, broadly oval or obovate, sessile; peduncles about the length of the leaves, few-flowered; calyx tubular, clothed with appressed white and black hairs intermixed, the teeth very short and acute; legumes (large) puberulent, sessile, ovate-oblong, terete, somewhat arcuate, pointed; seeds rugosely punctate.

"Rocky Mountains, on the hills of 'Ham's Fork' of the Colorado of the West.—Plant 2–3 inches high: root thick, somewhat fusiform. Leaves 1–2 inches long: leaflets small. Legumes very large for the size of the plant, 1–1½ inch long, thick and coriaceous, somewhat spongy externally and minutely rugose-reticulated.—Allied to P. lotiflora: a very distinct and peculiar species." *Nuttall.*

30. *P. mollissima* (Nutt.! mss.): "very woolly, cæspitose, nearly stemless; caudex thick, branching above; leaves petiolate; leaflets 4–6 pairs, cuneate-oblong, obtuse or acutish, sessile; stipules oblong, membranaceous, distinct; peduncles shorter than the leaves, few- (5–6-) flowered; calyx tubular, the subulate teeth much shorter than the tube; legumes extremely woolly, sessile, ovate, pointed, incurved.

"Plains of the Rocky Mountains, and on the hills of 'Ham's Fork' of the Colorado of the West. May.—A very remarkable species, on account of its dense woolly vesture: the rather large pods appear like a mass of fine yellowish-white wool. The flowers are narrow, nearly an inch long, and ochroleucous, with a purplish spot on the tip of the keel. The calyx is about two-thirds the length of the petals, with a few black hairs intermixed." *Nuttall.*

31. *P. simplicifolia* (Nutt.! mss.): "dwarf, very densely cæspitose, silvery-canescent, stemless; caudex much branched above; leaves crowded in dense tufts, simple, linear or lanceolate, usually involute, acute; scapes 1–2-flowered, scarcely exserted; calyx somewhat tubular; the teeth acute, shorter than the tube; legumes glabrous, coriaceous, sessile, somewhat triquetrous, pointed, scarcely longer than the calyx.

"Summits of high hills of the Rocky Mountain range, towards the sources of the Platte.—A very singular alpine species, forming dense tufts sometimes a span or two broad, not rising more than an inch or two from the ground. Leaves almost subulate. Stipules very thin and membranous, hairy. Calyx at length nearly glabrous. Flowers ochroleucous: vexillum, oblong, reflexed; the tip of the keel purplish. Legume small, with a rigid point." *Nuttall.*—This plant has the habit of several species of Mr. Nuttall's genus Homalobus. We have not seen the fruit. The leaves, which are densely aggregated, are probably *phyllodia*, or perhaps sessile leaflets.

36. HOMALOBUS. *Nutt. mss.*

"Calyx 5-toothed. Keel obtuse. Style short, recurved. Legume linear or oblong, much compressed, several-seeded; the sutures neither introflexed nor tumid: funiculi very long.—Perennial herbs with the aspect of Phaca, and nearly the legumes of Vicia. Leaves unequally pinnate, sometimes reduced to a single leaflet. Racemes axillary or radical."

"The species are all more or less alpine, and chiefly natives of the central table-land or high hills of the Rocky Mountain chain." *Nutt.*

* *Caulescent: leaves pinnate with numerous leaflets, turning blackish in drying, not rigid: racemes usually in pairs: legumes membranaceous, more or less stipitate.*—Ervoideæ.

1. *H. dispar* (Nutt.! mss.): "decumbent, puberulent; stem somewhat striate, nearly glabrous: leaves almost sessile; leaflets 6–10 pairs, linear-oblong, obtuse; stipules short, ovate, the lower ones united; racemes many-flowered, loose, almost sessile, scarcely longer than the leaves, often 2–3 together; bracts minute, shorter than the pedicels: legumes elliptical-oblong, obtuse, flat, somewhat stipitate, the stipe shorter than the calyx. Orobus dispar, *Nutt. gen.* 2. *p.* 95. O.? dispar, *DC. prodr.* 2. *p.* 380.

"Dry hills around Fort Mandan, Missouri, and on the Platte, to near the

Rocky Mountains, *Nuttall!* June.—A spreading decumbent plant, with numerous ochroleucous flowers. Legumes glabrous, 4–8-seeded. *Nuttall.*

2. *H. multiflorus:* nearly erect, pubescent with appressed hairs, or at length nearly glabrous; stem slightly striate; leaflets 6–10 pairs, oblong or linear-oblong, obtuse; stipules small, ovate, the lower ones united; racemes usually solitary, pedunculate, many-flowered, loose, at length longer than the leaves; bracts very minute, shorter than the pedicels; legumes linear-oblong, acute, flat, stipitate, the stipe longer than the calyx." *Nutt.*—H. nigrescens, *Nutt. ! mss.* Phaca nigrescens, *Hook. ! fl. Bor.-Am.* 1. *p.* 143. Ervum multiflorum, *Pursh ! fl.* 2. *p.* 789. Astragalus tenellus, *Pursh, fl.* 2. *p.* 473 (partly), fide *Pursh, l. c.*

Missouri, *Lewis, Bradbury !* (ex *Pursh.*) On the Saskatchawan and north to Fort Franklin on the Mackenzie River, lat. 65, *Richardson, Drummond !* With the preceding species, *Nuttall !* Legumes about an inch long, nodding, blackish, glabrous. Racemes sometimes in pairs. "Corolla ochroleucous; the keel tipped with dull purple." *Nutt.*—Very near the preceding species, from which we are unable clearly to distinguish it, except by the shape of the pods and the length of the stipe. According to Nuttall, this species has smaller flowers and narrower leaflets; but this is not the case with some of our specimens from Hooker. Mr. Nuttall refers Ervum multiflorum, *Pursh* to his H. dispar; but a fragment of Bradbury's specimen in our possession proves it to belong rather to the present species; probably the two species may have been confounded, as they are said to grow together.

** *Caulescent, rigid, minutely canescent, branching plants: leaflets linear or subulate, often few or wanting: petioles persistent, and sometimes dilated: legumes sessile. (Habit of Phaca longifolia.)*—Genistoideæ.

3. *H. campestris* (Nutt. ! mss.): "nearly erect, stout, with rigid rush-like branches; petioles semi-cylindrical, somewhat dilated towards the extremity; the lower ones bearing 3–5 pairs of rigid linear-subulate leaflets; the upper ones 3-foliolate or simple; stipules triangular-subulate; the uppermost short; racemes 5–10-flowered, loose; calyx hirsute with black hairs, with short subulate teeth; legumes pubescent, long and straight, compressed.

"Sandy plains of the Colorado of the West, near the sources of the Platte. —About a foot high. Flowers ochroleucous, slightly tinged with purple [about as large as in Vicia Cracca]: bracts shorter than the pedicels. Legumes about an inch in length. The petioles are dilated at the extremity into a very long linear-subulate leaflet, as in Phaca longifolia." *Nuttall.*

4. *H. junceus* (Nutt. ! mss.): "erect, slender, much branched; radical petioles bearing 1–2 pairs of minute leaflets, the cauline ones filiform and leafless; stipules broadly triangular, minute; peduncles very long, the flowers few and remote; bracts scarcely any; teeth of the calyx very short and obtuse; legumes long, linear, straight, puberulent.

"With the preceding, and in sandy places in the Rocky Mountain range towards the Oregon.—Smaller and much more slender than the preceding. Legumes an inch long, narrow, many-seeded." *Nuttall.*

5. *H. orthocarpus* (Nutt. ! mss.): "decumbent, slender, flexuous, much branched from below; lower leaves with 1–2 pairs of long narrowly linear and very acute leaflets; upper leaves simple, sessile, similar to the lower leaflets; stipules minute, dilated; peduncles longer than the leaves, few-flowered; teeth of the calyx very short, acute; legumes oblong-linear, nearly straight, coriaceous, somewhat puberulent, torulose, 6–8-seeded.

"With the preceding.—Flowers ochroleucous tinged with dull purple. Pedicels rather long: bracts minute.—A very rush-like plant, with divaricate naked branches."—*Nuttall.* The legume in our imperfect specimen appears to have been somewhat arcuate. Flowers the size of those of H. campestris.

6. *H. decumbens* (Nutt.! mss.): much branched from the base, diffuse, or decumbent, slender; leaflets 3–5 pairs, mostly very small, narrowly lanceolate-linear, on long often slightly dilated petioles; stipules subulate, the lower ones partly united; peduncles very long; racemes loose, 5–10-flowered; legumes flat, linear, elongated, falcate, somewhat puberulent.

"Sandy plains of the Colorado of the West, near the sources of the Platte.—Flowers smaller than in the foregoing species, ochroleucous, the keel tipped with dull purple. Legumes yellowish-white, more than an inch long, many-seeded. A low, slender species." *Nuttall.*

7. *H. tenuifolius* (Nutt.! mss.): "low, branched from the base, somewhat cæspitose; leaflets 3–6 pairs, very small, subulate, on a narrow channelled rachis; stipules triangular-acuminate, the lowermost broader and membranaceous; peduncles very long, 5–8-flowered; teeth of the calyx short and acute; legumes short and flat, linear-elliptical, straight, somewhat puberulent.

"Hills of the Rocky Mountains.—Plant 3–4 inches high. Leaflets about 3 lines long, pungent, often falcate. Bracts very minute. Flowers small, ochroleucous tinged with purple." *Nuttall.*—Smaller than the preceding species, with a shorter and straight legume.

* * * *Stemless, cæspitose, dwarf, silvery-canescent plants; leaves simple (phyllodia), or sometimes 3–5-foliolate, clustered; stipules scarious, connate, imbricated; racemes on slender scapes; legumes sessile, at length resupinate.*—Drabellæ.

8. *H. cæspitosus* (Nutt.! mss.): "leaves simple, or pinnately 3–5-foliolate; linear-lanceolate or oblanceolate, narrow, acute, tapering below; racemes loose; bracts lanceolate-subulate, about the length of the pedicels in fruit; teeth of the calyx subulate, about the length of the tube; legumes oblong-lanceolate, acuminate, flat, very slightly curved, at length glabrous, about 12-ovuled.

"Dry and lofty hills of the Platte towards the Rocky Mountains, in barren gravelly places. June.—Plant 3–4 inches high. Leaves in close tufts, an inch or more in length. Flowers purple, small. Legumes 4–5 lines long [the upper edge thin, somewhat turgid towards the dorsal suture], pubescent when young." *Nuttall.*—Bracts (as also in the following species) somewhat scarious or membranaceous.

9. *H. brachycarpus* (Nutt.! mss.): "leaves simple, rarely 3-foliolate, lanceolate-linear, acute, tapering below; racemes loose; bracts subulate, nearly as long as the calyx; teeth of the calyx setaceous-subulate, as long as the tube; legumes oblong-elliptical, with an abrupt short point, flat, straight, at length almost glabrous, about 8-ovuled.

"With the preceding, to which it is closely allied; but a smaller plant, with a shorter nearly straight legume. Flowers small, purple." *Nuttall.*—Legumes (immature) about 3 lines long.

10. *H. canescens* (Nutt.! mss.): "leaves simple, lanceolate, pungent, tapering below into slender petioles; racemes subcapitate, at length rather loose; flowers larger; bracts subulate, nearly the length of the calyx; teeth of the calyx subulate, about as long as the tube; legumes linear, flat, abruptly pointed, somewhat curved, puberulent, about 12-ovuled.

"On the high chalky hills of the Platte towards the Rocky Mountains.—Plant 2–4 inches high. Leaves broader than in the preceding species, which it greatly resembles; the flowers much larger, bright purple: vexillum emarginate." *Nuttall.*

37. KENTROPHYTA. *Nutt. mss.*

"Calyx campanulate, deeply 5-cleft; the segments nearly equal; vexillum oblong, reflexed: keel-petals obtuse, cohering along the back, shorter than the wings. Ovary with 3–4 ovules. Legume partly included in the calyx, ovate, 1-celled, coriaceo-membranaceous, 1–2-seeded.—Perennial dwarf and cæspitose canescently pubescent herbs, diffusely branched. Stipules more or less cohering with each other. Leaves pinnately 3–7-foliolate: leaflets linear, inarticulated and persistent, rigid, and spiny at the tip. Flowers small, ochroleucous, axillary, 2–3 together, subsessile."

1. *K. montana* (Nutt.! mss.): "stipules scarious, cohering about half their length; calyx pubescent with dark and white hairs.

β. "more densely leafy, with smaller leaflets.

"Hills of the Platte, in naked places.—Stems intricately branched and forming circular mats. Leaves very numerous; leaflets nearly half an inch long and less than a line wide (in *β.* only 3–4 lines long), almost subulate, when old rigidly divaricate, as in Ulex Europæus. Stipules spiny at the tip like the leaves. Flowers almost sessile, about 3 lines long. Keel broad, tipped with purple; wings oblong, about one-third longer than the keel; vexillum with the limb reflexed almost at right angles to the short claw. Stamens diadelphous. Legume pubescent, projecting a little beyond the calyx, dehiscent, compressed. Seed mostly solitary, nearly the size of the legume, dark brown." *Nuttall.*

2. *K. viridis* (Nutt.! mss.): stipules herbaceous, distinct nearly to the base; hairs of the calyx all white.

"With the preceding, which it greatly resembles; but a larger plant and less canescent." *Nuttall.*

TRIBE VI. HEDYSAREÆ. *DC.*

Corolla papilionaceous. Stamens either monadelphous or diadelphous (9 & 1, or 5 & 5), rarely distinct: anthers sometimes of 2 forms. Legume (loment) transversely divided into several indehiscent 1-seeded joints, occasionally reduced to a single 1-seeded cell. Embryo incurved or sometimes straight.—Erect or procumbent herbs or shrubs. Leaves abruptly or unequally pinnate or pinnately 2–3-foliolate, or rarely palmately 2–5-foliolate, occasionally reduced to a single leaflet, sometimes stipellate. Inflorescence axillary or terminal, racemose, spicate, or umbellate.

38. ZORNIA. *Gmel; Michx. fl.* 2. *p.* 76*; DC. prodr.* 2. *p.* 316.

Calyx campanulate, bilabiate; upper lip obtuse, emarginate; the lower 3-cleft. Corolla inserted into the bottom of the calyx; vexillum orbicular, the sides revolute; keel-petals lunulate, cohering at the back. Stamens monadelphous, alternately shorter; anthers alternately oblong and globose. Legume compressed, 2–5-jointed; the joints roundish, usually hispid.—Herbaceous and mostly annual plants. Leaves petioled, palmately 2–4-foliolate. Stipules sagittate; lower ones lanceolate; the upper ones larger, supplying the place of bracts. Flowers sessile, yellow, each with 2 bracteiform stipules at the base.

1. *Z. tetraphylla* (Michx.): perennial; leaflets 4, oblong or lanceolate; bracts glabrous, as long as the legumes, 5-nerved; legumes aculeate with retrorsely scabrous prickles.—*Michx.! fl.* 2. *p.* 76; *Pursh, fl.* 2. *p.* 484; *Ell. sk.* 2. *p.* 219; *DC. prodr.* 2. *p.* 317. Z. bracteata, *Gmel. syst. p.* 1096. Anonymos bracteata, *Walt. Car. p.* 181. Hedysarum tetraphyllum, *Lam. dict.* 2. *p.* 405, not of *Thunb.*

Dry sandy soils, North Carolina! to Florida! and west to Texas! June–Aug.—"Root somewhat cylindrical and tuberous." *Ell.* Stems prostrate and diffuse, 1–2 feet long. Leaflets 6–10 lines long, acute at each end; those of the lowest leaves sometimes obovate. Racemes axillary, much longer than the leaves, 5–9-flowered, the flowers distant. Bracts broadly ovate, nearly covering the flowers. Calyx much smaller than the corolla, ciliate; upper lip strongly emarginate; the lower with 3 acute teeth. Vexillum reniform; wings broadly obovate, as long as the vexillum: keel-petals cohering at the back, rather acute, somewhat longer than the wings. Legume about $\frac{3}{4}$ of an inch long, 2–4-jointed. Seeds oval, light brown. Cotyledons flattish. Radicle curved.

39. STYLOSANTHES. *Swartz; Lam. ill. t.* 627; *DC. prodr.* 2. *p.* 317.

Flowers of two kinds intermixed; the one kind complete but sterile; the other achlamydeous and fertile. STERILE FL. Calyx somewhat bilabiate with 2 bracteoles at the base; the tube very long and slender; upper lip 2-cleft, the segments obtuse; lower lip with 3 acute segments. Corolla inserted in the throat of the calyx: vexillum very broad: keel cymbiform, small, entire at the apex. Stamens monadelphous: anthers alternately linear and ovate. Ovary sessile, with 2–3 ovules, always sterile: style filiform, very long: stigma capitate, minute, glabrous.—FERTILE FL. consisting of a sessile ovary between 2 bracteoles, with 1–2 ovules: style short and recurved. Legume 1–2-jointed; the upper joint acuminate and uncinate with the persistent style; the lower usually abortive. Seeds ovate. Embryo curved or sometimes nearly straight.—Small herbaceous or suffruticose plants. Stems branched. Leaves pinnately trifoliolate. Stipules adnate to the petiole. Spikes terminal, imbricated with stipules and bracts.

Mr. Bentham, in a paper on the affinities of Arachis, read before the Linnæan Society in May, 1839, gives an account of the two kinds of flowers in Stylosanthes, and shows its affinity to Arachis, which he considers a genuine Hedysarea.

1. *S. elatior* (Swartz): herbaceous; stem erect or procumbent, pubescent on one side; leaflets lanceolate, glabrous; spikes few-flowered; bracts and uppermost leaflets lanceolate, spinulose-ciliate; legume 2-jointed, the lower joint sterile and stipitiform.—*Swartz, in act. Holm.* 1789, *t.* 11, *f.* 2. *ex. DC. prodr.* 2. *p.* 318; *Willd. sp.* 3. *p.* 1167; *Nutt. gen.* 2. *p.* 106; *Ell. sk.* 2. *p.* 203. S. hispida, *Michx.! fl.* 2. *p.* 75, not of *Richard.* Arachis aprica, *Walt. Car. p.* 182. Trifolium biflorum, *Linn.*

β. hispidissima (Michx.! l. c.): stem hispid; leaflets spinulose-ciliate.

Dry sandy soils, particularly in pine barrens, Long Island! to Florida! west to Arkansas! *β.* Carolina, *Michaux!* Alabama, *Dr. Gates!* June–Aug.—Stems 6–12 inches long, cæspitose, with a broad pubescent line on one side. Leaves on short petioles: leaflets about one inch long, acute at each end, mucronate, the veins beneath very prominent: upper leaves often 1-foliolate. Spikes 2–4-flowered, one or two of the lowest flowers destitute of calyx, corolla and stamens. Ovary attenuated at the base, 2-ovuled. Legume obovate or roundish, the lower joint abortive. Sterile flowers furnished (as well as the fertile ones) with two lanceolate plumose bracteoles. Calyx ciliate, much shorter than the corolla; the tube glabrous. Corolla orange-yellow: vexillum twice as long as the other petals, retuse; wings obovate, with a small tooth at the base of the limb: keel somewhat falcate, truncate at the apex. Ovary at the bottom of the slender calyx-tube and falling off with it.

40. CHAPMANNIA.

Flowers of two kinds? STERILE FL. Calyx with 2 bracteoles at the base; the tube very long and slender, the corolla inserted on its throat; limb 5-toothed, the lowest tooth longest and remote from the others. Vexillum roundish; keel cymbiform, nearly as long as the vexillum, bifid at the summit. Stamens monadelphous, alternately longer; anthers all oblong and similar. Ovary sessile, with 2–3 ovules, always sterile: style filiform, very long: stigma capitate, minute, glabrous. FERTILE FL. not seen.—Herbaceous. Stems branched. Leaves unequally pinnate. Stipules small, free. Racemes terminal, nearly naked. Flowers small, yellow.

We dedicate this interesting genus to our friend Dr. A. W. Chapman, an accurate and indefatigable botanist, who has largely contributed to our knowledge of the plants of Middle Florida. Although we have not seen the fertile flowers or fruit, there can be little doubt of its near affinity to Stylosanthes on the one hand and to Arachis on the other.

C. Floridana.

Tampa Bay, East Florida, *Dr. Burrows! Dr. Leavenworth!* May.—Stem 2–3 feet long, erect or somewhat assurgent, sulcate, hirsute and viscid, particularly above. Leaflets 2–3 pairs, elliptical, oblong, mostly retuse, 8–14 lines long, nearly glabrous above, hairy, minutely scaly and of a light purplish color beneath. Stipules very small, subulate, membranaceous. Racemes few-flowered, somewhat paniculate. Flowers rather larger than in Stylosanthes elatior, each with a small broadly ovate bract and 2 minute lanceolate bracteoles at the base. Calyx hispid; the tubular base resembling a slender pedicel. Petals nearly equal in length, the claws short: wings oblong, scarcely toothed at the base: keel-petals cohering at the back except near the summit. Filaments monadelphous below, distinct above: anthers large. Ovary oblong: style nearly straight, exserted.

41. ÆSCHYNOMENE. *Linn; Lam. ill. t.* 629; *DC. prodr.* 2. *p.* 320; *W. & Arn. prodr. Ind. Or.* 1. *p.* 218.

Calyx with 2 ovate deciduous bracteoles at the base, bilabiate; the upper lip bifid or 2-toothed; the lower trifid or 3-toothed. Corolla inserted into the bottom of the calyx: vexillum roundish: wings oblong: keel cymbiform, 2-parted at the base. Stamens equally diadelphous (5 & 5). Legume compressed, straight, exserted, composed of many (rarely few) 1-seeded joints, which are usually square at both ends and easily separated from each other. Seeds compressed.—Herbaceous or shrubby plants. Leaves unequally pinnate, usually with numerous leaflets. Stipules semisagittate. Racemes axillary. Flowers often yellow.

1. *Æ. hispida* (Willd.): stem herbaceous, erect, and (with the petioles and legumes) somewhat hispid and roughened with prickly tubercles; leaflets many (20–25) pairs, linear, obtuse; stipules ovate; racemes 3–5-flowered; legume distinctly stipitate, 6–10-jointed, slightly sinuate along the lower margin.—*Willd. sp.* 3. *p.* 1163; *Pursh, fl.* 2. *p.* 485; *Nutt. gen.* 2. *p.* 111; *Ell. sk.* 2. *p.* 220; *Bart. fl. Am. Sept.* 1. *p.* 102, *t.* 29; *DC. prodr.* 2. *p.* 485. Hedysarum Virginicum, *Linn.*

Marshy places, along rivers, Pennsylvania! to West Florida! not found west of the Alleghany Mountains. Aug.— ① Stem 2–3 feet high. Leaflets 5–10 lines long, glabrous, with extremely minute pellucid punctures. Stipules acuminate. Racemes simple, usually bearing a leaf. Calyx unequally bilabiate; upper lip longer, bifid; lower 3-cleft. Corolla yellow tinged with red externally: vexillum emarginate; wings denticulate, scarcely toothed at the base: keel falcate. Anthers oblong. Ovary very hispid. Legume 1½—2½ inches long and nearly 3 lines wide, often much constricted between one or two of the joints.

2. *Æ.? viscidula* (Michx.): stem herbaceous, prostrate, viscidly pubescent, slender; leaflets 3–4 pairs, obovate, somewhat hairy beneath; stipules 5-nerved, oblique; peduncles usually 2-flowered; bracts resembling the stipules; legume hispid, 2–3-jointed, deeply constricted on the lower suture between the roundish joints.—*Michx.! fl.* 2. *p.* 74; *Nutt. gen.* 2. *p.* 141; *Ell. sk.* 2. *p.* 220; *DC. prodr.* 2. *p.* 323. *Æ.* prostrata, *Poir. suppl.* 4. *p.* 76. (fide *DC.*)

Sandy soils, South Carolina to East Florida!—① Stem 1–2 feet long, branched, diffuse. Leaflets commonly 3 pairs, 4–6 lines long, often retuse, slightly mucronate, glabrous above. Stipules and bracts prominently nerved. Raceme longer than the leaves. Upper lip of the calyx 2-cleft; the segments obtuse; lower lip almost equally 3-cleft. Flowers scarcely one third as large as in the preceding species, yellow, on pedicels about 2 lines long: vexillum roundish, emarginate: wings obovate-oblong: keel narrow, falcate. Anthers oblong. Ovary hispid. Legume about ¾ of an inch long, hispid with rigid hairs which are glandular at the base, constricted between the joints almost to the superior suture.—Differs from the genuine species of Æschynomene in the 5-cleft and scarcely bilabiate calyx, the deeply sinuate legume, the lanceolate stipules, &c. It will form, with a few South American species, a separate section, or perhaps a distinct genus, as suggested by Kunth.

42. HEDYSARUM. *Linn.* (partly); *DC. mem. Leg., & prodr.* 2. *p.* 340.

Calyx 5-cleft; the segments linear-subulate, nearly equal. Vexillum large; keel obliquely truncate: wings much shorter than the keel. Stamens diadelphous (9 & 1), and with the style abruptly bent inward towards the summit. Legume composed of several compressed 1-seeded orbicular or lenticular joints, which are connected with each other by the middle. Herbaceous or suffrutescent plants; perennial. Leaves unequally pinnate, exstipellate. Racemes spicate, on simple axillary or terminal peduncles. Flowers rather large, purple, white, or ochroleucous.

The North American species are all more or less alpine, and belong to the section Leiolobium, *DC.*: the joints of the legume not echinate or villous.

1. *H. boreale* (Nutt.): stem erect, strict, a little decumbent at the base; leaves subsessile; leaflets 8–12 pairs, oblong, minutely hairy beneath; stipules united, sheathing, with subulate points; racemes elongated, on long peduncles; the flowers very numerous, rather secund, and somewhat imbricately reflexed; teeth of the calyx short, unequal; vexillum and wings shorter than the keel;

joints of the legume 3–4, nearly orbicular, glabrous or puberulent, compressed, rugose-reticulated. *Nutt.! gen.* 2. *p.* 110. *& in jour. acad. Philad.* 7. *p.* 19, (excl. syn.); *DC. prodr.* 2. *p.* 343; *Hook.! fl. Bor.-Am.* 1. *p.* 155. H. alpinum. *Michx.! fl.* 2. *p.* 74; *Richards.! app. Frankl. journ. ed.* 2. *p.* 28, not of *Linn.* H. alpinum *β.* Americanum, *Pursh, fl.* 2. *p.* 484.

Northern Canada, *Michaux!* (and near cataracts in the Alleghany Mountains, ex. *Michx.*) to the Arctic Circle, *Richardson!* Kotzebue's Sound, *Beechey;* and the Rocky Mountains in lat. 54°, *Drummond!* Also in dry barren grounds on the Missouri around Fort Mandan, *Nuttall*, and near the sources of that River, *Mr. Wyeth!* June-July.—Stem rather stout, striate, minutely pubescent, at length nearly glabrous, 6–12 inches high. Flowers large and showy, bright violet-purple. Teeth of the calyx shorter than the tube, triangular-subulate; the 2 upper ones shortest.—Certainly very distinct from H. alpinum of Siberia.

2. *H. Mackenzii* (Richards.); stem somewhat decumbent; leaves petioled; leaflets about 5 pairs, oblong, canescently hairy on both sides; stipules partly united, sheathing, with long subulate points; racemes short, on peduncles about the length of the leaves; flowers (large) 7–10, somewhat spreading; teeth of the calyx narrowly subulate, longer than the tube; vexillum and wings almost as long as the keel; joints of the legume transversely rugose, pubescent.—*Richards.! app. Frankl. journ. ed.* 2. *p.* 28; *Hook. l. c.*

β. upper surface of the leaflets and ovary glabrous. *Hook.! l. c.*

Barren grounds, Saskatchawan, north to the Arctic Sea and west to the mountains, *Richardson! Drummond.*—Flowers larger and brighter colored than in the preceding species, or perhaps than any other of the genus.—According to Richardson, this plant is the *Liquorice* mentioned by Mackenzie in his *Voyage to the Arctic Sea.*

3. *H. canescens* (Nutt.! mss.): "stems numerous from the same root, erect or decumbent, minutely canescent; leaves on short petioles; leaflets 4–6 pairs, narrowly oblong or cuneate-oblong, canescent; stipules very small, sheathing, with subulate points; racemes short; the peduncles longer than the leaves: wings much shorter than the keel; joints of the legume 3–4, oval-orbicular, nearly glabrous, transversely rugose-reticulated."

"Plains of the Rocky Mountains, particularly near Lewis's River.—Plant 1–2 feet high; stems decumbent at the base, stout branching." *Nuttall.*—Racemes at length elongated. Flowers somewhat spreading (reflexed in fruit), about the size of those of H. boreale. Teeth of the calyx narrowly subulate, rather longer than the tube.—Intermediate in some respects between the two preceding species.

43. DESMODIUM. *DC. mem. Leg., & prodr.* 2. *p.* 355; *W. & Arn. prodr. Ind. Or.* 1. *p.* 223.

Species of Hedysarum, *Linn.*—Desmodium & Hedysarum, *Desv., Kunth.*

Calyx with 2 bracteoles at the base, bilabiate (rarely almost entire); upper lip 2-cleft or bidentate; the lower 3-parted or 3-toothed. Corolla inserted into the base of the calyx: vexillum roundish: keel obtuse, but not truncate. Stamens diadelphous (9 & 1), or monadelphous from the base to the middle and diadelphous above (rarely perfectly monadelphous): filaments somewhat persistent. Style filiform: stigma capitate. Legume (loment) compressed, composed of several 1-seeded joints, which at length separate.—Herbaceous or suffruticose plants. Leaves pinnately trifoliolate (or sometimes reduced to a single leaflet); the lateral leaflets 1-stipellate, the terminal one 2-stipellate. Flowers in axillary or terminal racemes, which are often paniculate, small, purplish, often turning green in withering.

The North American species are all herbaceous perennials, belonging to the section CHALARIUM, *DC.* and to the subdivision *Trifoliati.* They have been assiduously studied by our excellent friend Dr. Boott, of London, and compared with original specimens in the herbaria of Linnæus, Clayton, Banks, Michaux, &c. Most of our own specimens have been examined by Dr. Boott, who has kindly furnished us with his remarks; but he by no means considers the synonymy as satisfactorily determined. According to Mr. Nuttall, not a single species of Desmodium occurs west of the River Platte.

§ 1. *Stamens wholly or partly monadelphous: calyx toothed or nearly entire: legume stipitate.*

1. *D. nudiflorum* (DC.): stem erect, puberulent, leafy at the summit; leaflets broadly ovate, somewhat glaucous, beneath; raceme radical and scape-like, assurgent, usually naked, much longer than the stem: stamens perfectly monadelphous; calyx broadly campanulate, obscurely bilabiate, upper lip entire, the lower slightly 3-toothed; legumes on a very long stipe, straight on the back, the joints obscurely triangular.—*DC. prodr.* 2. *p.* 330; *Hook. fl. Bor.-Am.* 1. *p.* 154; *Darlingt. fl. Cest. p.* 418. Hedysarum nudiflorum, *Linn.; Michx.! fl.* 2. *p.* 71; *Pursh, fl.* 2. *p.* 483; *Ell. sk.* 2. *p.* 209.
Dry woodlands, Canada! to Georgia! and Florida; west to Louisiana July-Aug.—Stem 6–12 inches high. Leaflets 2–3 inches long, pale beneath, ciliolate on the margin. Scape sometimes 3 feet or more in height, arising from the base of the stem, often bearing 1–2 trifoliolate leaves. Panicle loose: pedicels single or in pairs, 4–8 lines long, filiform. Calyx at length spreading; the teeth very short, obtuse, except the middle one of the lower lip, which is rather acute. Corolla bright purple, the keel pale; vexillum roundish-obovate, with 2 dark spots near the base. Legume 2–3- (rarely 4-) jointed; the joints slightly connected, a little concave on the back, sparingly pubescent with short uncinate hairs; stipe nearly an inch long.

2. *D. acuminatum* (DC.): stem erect, simple, pubescent, leafy at the summit; leaves on very long petioles; leaflets conspicuously acuminate, the lateral ones broadly ovate, terminal one roundish; panicle terminal, on a very long naked peduncle; calyx campanulate; the upper lip obtuse, slightly emarginate; lower lip 3-lobed, the middle lobe acute; stamens, monadelphous below the middle; joints of the legumes 2–3, semioval.—*DC. prodr.* 2. *p.* 329; *Hook. fl. Bor.-Am.* 1. *p.* 154; *Darlingt. fl. Cest. p.* 417. Hedysarum acuminatum, *Michx.! fl.* 2. *p.* 72; *Pursh, fl.* 2. *p.* 483; *Bigel. fl. Bost. p.* 275; *Ell. sk.* 2. *p.* 209. H. glutinosum, *Willd. sp.* 3. *p.* 1198.
Dry woodlands, Canada! to Florida! west to Louisiana! July.—Stem about one foot high, sprinkled with soft hairs. Leaves 2–4 or sometimes 5 inches long, thin: petioles 2–6 inches in length. Stipules setaceous. Racemes in a long racemose terminal panicle: pedicels 3–4 lines long. Flowers much resembling those of the preceding species. Legume clothed with short uncinate hairs; the joints concave above, rounded below; stipe about half an inch long.

3. *D. pauciflorum* (DC.): stem decumbent or assurgent, mostly simple, somewhat hairy; leaves distant; lateral leaflets ovate, the terminal one rhombic-ovate, all slightly acuminate and finely ciliate; stipules almost wanting; racemes terminal, slender, few-flowered; calyx campanulate, indistinctly bilabiate; upper lip 2-toothed, the lower 3-toothed, all the teeth very short and acute; stamens monadelphous below the middle; legume mostly 2-jointed; the joints obtusely triangular; stipe shorter than the pedicels. *DC.*

prodr. 2. *p.* 330; *Darlingt.! fl. Cest. p.* 417. Hedysarum pauciflorum, *Nutt.! gen.* 2. *p.* 109.

Woods, Pennsylvania! Western States! Arkansas? Louisiana! August.—Stem a foot or more in height, sometimes a little branched, slender. Leaflets 1–3 inches long, pale beneath, thin, sprinkled with short hairs. Flowers few (4–10), in a loose raceme or panicle: pedicels about one-third of an inch long. Teeth of the calyx nearly equal. Corolla pale purple or nearly white. Legumes resembling those of D. nudiflorum, but the joints are less angular.

§ 2. *Stamens diadelphous (or with the tenth stamen connected with the others only near the base): calyx bilabiate, cleft below the middle: legume mostly subsessile.*

[illegible]

4. *D. Canadense* (DC.): stem erect, hairy, striate; leaflets oblong-lanceolate, nearly glabrous or strigosely pubescent; stipules subulate; racemes terminal and in the axils of the uppermost leaves; bracts ovate-lanceolate, with a long acumination; calyx deeply bilabiate; upper lip oblong, bifid at the apex, the lower 3-parted; the segments lanceolate; joints of the legume semi-oval-triangular, truncate at both ends, hispid.—*DC. prodr.* 2. *p.* 328; *Hook. fl. Bor.-Am.* 1. *p.* 154. Hedysarum Canadense, *Linn.: Willd. sp.* 3. *p.* 1187; *Bigel. fl. Bost. p.* 275.

Dry Woods, Canada! (as far north as lat. 54°, *Hook.*) to Pennsylvania! Western States! August.—Stem 2–3 feet high, robust, often villous or hirsute. Leaflets 2–3 inches long, tapering to the summit, but rather obtuse. Racemes numerous, erect, forming a panicle at the summit of the stem. Bracts imbricated and very conspicuous before the flowers are expanded. Stamens diadelphous the upper third of their length. Legume about one inch long; the joints convex on the upper side, rounded and obscurely angular below.

5. *D. canescens* (DC.): stem erect, branching, striate, hairy and scabrous, particularly above; leaflets ovate, rather acute or slightly acuminate, scabrous pubescent on both sides; stipules large, obliquely ovate, acuminate, finely striate, ciliate, persistent; panicle large, very hairy, canescent; bracts ovate-lanceolate, deciduous, ciliate; upper lip of the calyx entire or slightly bifid at the apex; segments of the lower lip lanceolate, the middle one narrow; stamens diadelphous nearly to the base; legumes of 4–6 oblong-triangular reticulated hispid joints.—*DC. prodr.* 2. *p.* 328; *Beck. bot. p.* 84; *Darlingt.! fl. Cest. p.* 415. D. viridiflorum, *DC. l. c.*, excl. syn. D. Aikinianum, *Beck. l. c.* Hedysarum canescens, *Linn. sp.* 1054; *Pursh, fl.* 2. *p.* 482. H. viridiflorum, *Willd. sp.* 3. *p.* 1192 (not of *Linn.*); *Michx.! fl.* 2. *p.* 71; *Pursh, l. c.* H. scaberrimum, *Ell. sk.* 2. *p.* 217. H. Aikini, *Eaton.! man. ed.* 7. *p.* 166.

Moist rich soils, particularly along rivers, Massachusetts! and New York! to S. Carolina! and Florida. July–Aug.—Stem 3–5 feet high, rather stout, more or less hairy, the pubescence partly very short and consisting of uncinate hairs. Leaflets 2–4 inches long and 1–3 inches wide; the terminal one usually somewhat rhombic, but often roundish, paler beneath, covered with a minute uncinate pubescence on both sides. Stipules 4–5 lines long, striate, scarious. Flowers in large paniculate racemes, which are terminal and axillary in the upper part of the stem; the branches densely clothed with canescent spreading hairs: pedicels 3–6 lines long, solitary or in pairs. Calyx hairy, deeply bilabiate; the segments all acute. Corolla about 3 times as long as the calyx, violet purple, becoming greenish in withering. Legume 1–1½ inch long, usually 3–5- (sometimes 6-) jointed; the joints convex on the upper side, obtusely angular below, truncate at both ends; stipe scarcely as long as the calyx.

6. *D. Dillenii* (Darlingt.): stem erect, branching, hairy; leaflets oblong or ovate-oblong, somewhat villous and glaucous beneath; stipules subulate; racemes paniculate, rather loose and slender; bracts ovate-lanceolate; upper lip of the calyx entire or slightly emarginate, middle lobe of the lower lip twice as long as the lateral ones; stamens diadelphous nearly to the base; legumes with 3–4 oblong reticulated pubescent joints.—*Darlingt.! fl. Cest. p.* 414. D. Marilandicum, *DC. prodr.* 2. *p.* 328 (excl. syn. *Linn.*); *Beck! bot. p.* 84. Hedysarum Marilandicum, *Willd. sp.* 3. *p.* 1189 (not of *Linn.*); *Pursh, fl.* 2. *p.* 482; *Ell. sk.* 2. *p.* 214. H. trifoliatum &c., *Dill. Elth.* 174, *t.* 144, *f.* 171.

Rich moist soils, Massachusetts! to Pennsylvania! west to Kentucky! August.—Stem about 3 feet high, sulcate. Leaflets 2–3 inches long, and 1–2 inches wide, usually ovate-oblong, rather obtuse, nearly glabrous above; the pubescence of the lower surface not scabrous to the touch. Stipules much smaller than in the preceding species. Panicle large, naked; the branches scabrous with very minute uncinate prickles, not canescent; pedicels 2–4 lines long, bracts deciduous. Flowers purple, changing to bluish-green in withering. Legume three-fourths of an inch long; the joints distinctly rhombic and connected by a narrow isthmus.—Allied to the preceding species; but readily distinguished by its scabrous stem, narrow stipules, fewer joints of the legume, &c.

7. *D. cuspidatum:* stem erect, glabrous; leaflets ovate or lanceolate-ovate, acuminate, glabrous; stipules lanceolate with a subulate point; panicle large, elongated, sparingly branched; bracts (conspicuous) ovate, cuspidate; upper lip of the calyx slightly bifid; lateral teeth of the lower lip triangular; about as long as the tube, the middle one much longer, lanceolate; stamens perfectly diadelphous legumes with 4–6 triangular-oblong hispid joints.—D. bracteosum, *DC. prodr.* 2. *p.* 329; *Beck. bot. p.* 85; *Darlingt.! fl. Cest. p.* 416. H. cuspidatum, *Muhl. in Willd. sp.* 3. *p.* 1198; *Pursh, fl.* 2. *p.* 482; *Bigel. fl. Bost. p.* 276. H. bracteosum, *Michx.! fl.* 2. *p.* 73; *Pursh, fl.* 2. *p.* 483; *Ell. sk.* 2. *p.* 213.

Banks of rivers and borders of woods, Canada! to S. Carolina and Florida! west to Arkansas!—August.—Stem 4–5 feet high, with few branches. Leaflets 3–5 inches long, and 1–2½ inches wide, tapering to a long acute point. Stipules glabrous, deciduous. Partial stipules conspicuous, subulate. Panicle often 2 feet long; the racemose branches slightly scabrous with a minute uncinate pubescence. Flowers often sterile. Bracts large, broad at the base, with a long acute point. Corolla purplish violet. Legume 1½–2 inches long.

8. *D. viridiflorum* (Beck): stem erect, densely pubescent and somewhat glabrous towards the summit; leaflets ovate, mostly obtuse, scabrous above, velvety-villous beneath; stipules ovate-lanceolate, acuminate, caducous; panicle elongated, naked; upper lip of the calyx slightly bifid; lowest tooth lanceolate, nearly twice as long as the triangular lateral ones; stamens somewhat monadelphous at the base; legumes of 3–4 obtusely triangular joints.—*Beck, bot. p.* 83; *Darlingt. fl. Cest. p.* 415, not of *DC.* Hedysarum viridiflorum, *Linn.! sp.* 1055; *Ell. sk.* 2. *p.* 217, not of *Willd.* H. caule recto, &c. *Gronov.! Virg. p.* 109.

Alluvial soils, Pennsylvania! to Florida! Alabama, *Dr. Gates!* Red River, Louisiana, *Dr. Hale!* Aug.—Stem 3–4 feet high, rather stout, paniculately branched. Leaflets 2–3 inches long; the lower surface clothed with a thick and very soft pubescence. Panicle very large. Bracts, small, broadly ovate. Calyx very hairy, scarcely ¼ the length of the corolla. Corolla violet-purple, turning greenish in withering. Legume about 1¼ inch long; the joints convex above, obtusely angular below.—This is the original Hedysarum viridiflorum of Linnæus, as has been ascertained by Dr. Boott; but not the plant described under this name by Willdenow, Pursh, and others.

9. *D. rhombifolium* (DC.): stem erect, stout, minutely pubescent (rather thick and coriaceous), reticulated beneath, ovate, obtuse, pubescent along the veins; the lateral ones ovate-oblong, somewhat distant; the terminal rhombic-ovate; stipules subulate, caducous; racemes paniculate, scabrous-pubescent; bracts ovate, small; lower lip of the calyx longest; the lateral teeth acute; legumes of 2–4 broadly semi-rhomboidal hispid-pubescent joints slightly convex on the back, with a stipe nearly the length of the lowest joint. —*DC. prodr.* 3. *p.* 330. Hedysarum rhombifolium, *Ell.! sk.* 2. *p.* 216.

β. more glabrous; leaflets smaller, paler beneath and not reticulated, glabrous or minutely pubescent on the veins.

In dry rich soil, S. Carolina! to Florida! and Louisiana! *β.* North Carolina! to Louisiana! and Arkansas! Aug.–Oct.—Stem 2–4 feet high. Petioles 1–3 inches long. Leaflets 2–3 inches long, very thick and firm, sometimes a little narrowed towards the apex but obtuse. Panicle very large: pedicels as long as the flowers. Joints of the legume about 3 lines in length, scarcely convex on the back when mature.—We have a form of this species which greatly resembles some varieties of D. viridiflorum, except that they want the tomentose pubescence of the lower surface of the leaves. Our smoother variety (which differs very slightly from the plant in Elliott's herbarium) is often taken for D. lævigatum, but it does not accord with the character of that species.

10. *D. lævigatum* (DC.): very smooth; stem simple, erect, somewhat glaucous; leaves on long petioles; leaflets ovate, acute; stipules subulate, minute and deciduous; panicle terminal, nearly simple; flowers by pairs upon long pedicels; bracts ovate, acute, shorter than the flower-buds. *Nutt.* —*DC. prodr.* 2. *p.* 329. Hedysarum lævigatum, *Nutt. gen.* 3. *p.* 109.

"In the forests of New Jersey, rare.—Rather large, and the smoothest of the North American species. Lower petioles about 3 inches long; the larger leaflets 3 inches long and 1½ broad, every where perfectly smooth, somewhat glaucous beneath, sometimes elliptic-ovate, constantly diminishing in size upwards: the stem attenuated into the terminal and racemose panicle; rachis of the panicle and the peduncles minutely pubescent: lowest segment of the calyx conspicuously elongated. The fruit I have not seen. Allied to H. cuspidatum but perfectly distinct." *Nutt.*—We have copied Mr. Nuttall's description entire, not having seen this species, unless we have mistaken it for a form of D. cuspidatum, from which it appears to differ only in having smaller stipules and bracts. Elliott's plant is, we suspect, not distinct from D. cuspidatum.

11. *D. glabellum* (DC.): stem erect, nearly glabrous; leaflets (small) ovate, obtuse, scabrous-pubescent on both sides; stipules subulate, minute; panicle terminal; upper lip of the calyx entire; the lower tooth longest; legume stipitate, nearly straight on the back, minutely hispid, with about 4 semi-rhomboidal reticulated joints.—*DC. prodr.* 2. *p.* 329. Hedysarum glabellum, *Michx.! fl.* 2. *p.* 73; *Ell. sk.* 2. *p.* 211; not of *Pursh.*

In shady places, S. Carolina, *Michaux! Elliott.* N. Carolina, *Mr. Curtis!* August–Sept.—Resembles D. Marilandicum in foliage, although the leaflets are often much larger and scabrous with appressed hairs, but the legumes are very like those of D. paniculatum. We have apparently a larger form of this species from Florida, but the fruit is wanting: perhaps it is rather a small-leaved D. Dillenii.

12. *D. Marilandicum* (Boott! mss.): stem erect, simple, slender, nearly glabrous; leaflets (small) ovate, very obtuse, often slightly cordate, thin; petioles as long as the lateral leaflets, glabrous; stipules lanceolate-subulate, caducous; panicle elongated, scabrous-puberulent; bracts lanceolate-ovate, very small; upper lip of the calyx rather shortest, emarginate; the lower

tooth lanceolate, longer than the rather obtuse triangular lateral ones; legumes with 2–3 hispid somewhat semi-orbicular joints.—*Darlingt.! fl. Cest. p.* 412. D. obtusum, *DC. prodr.* 2. *p.* 329; *Beck, bot. p.* 84. Hedysarum Marilandicum, *Linn.* (fide *herb! & pl. Gronov.!*) *spec.* 2. *p.* 748, excl. syn. *Dill.*, not of *Willd.* and later authors. H. obtusum, *Pursh! fl.* 2. *p.* 482; *Ell. sk.* 2. *p.* 212; scarcely of *Willd.*

Dry hills and woodlands, New England States! and New York! to Florida! Louisiana! and Alabama! July–Aug.—Stem 2–3 feet high, striate, glabrous or with a few scattered hairs. Leaflets scarcely an inch in length, glabrous or rarely with a few hairs on the veins beneath: petioles slender, always about the length of the lateral leaflets. Corolla small, violet-purple. Legumes small, sometimes of a single joint, but more frequently with 3; the upper margin distinctly sinuate.—This species is doubtless comprised in the Hedysarum obtusum, and is well known to American botanists under that name, but the specimen in Willdenow's own herbarium seems to be rather a smoother variety of the following species. This however is less important, as the original name of Linnæus must be adopted.

13. *D. ciliare* (DC.): stem erect, mostly simple, rather slender, hairy; leaves crowded, on very short hairy petioles; leaflets (small) roundish-ovate or oval, obtuse, rather coriaceous, pubescent and somewhat ciliate; stipules linear-subulate, caducous; lower branches of the panicle mostly elongated; upper lip of the hairy calyx shortest, usually entire; the lower tooth lanceolate and longest; legumes with 2–3 semi-orbicular or obliquely roundish-obovate hispid joints.—*DC.! prodr.* 2. *p.* 330; *Beck, l. c.; Darlingt. fl. Cest. p.* 413. Hedysarum ciliare, *Willd.! spec.* 3. *p.* 1190; *Pursh, l. c.; Nutt.! gen.* 2. *p.* 109; *Ell. sk.* 2. *p.* 212. H. coriaceum, *Poir. suppl.* 1. *p.* 416?

α. leaflets roundish.—Desmodium obtusum, *DC.! l. c.* Hedysarum obtusum, *Willd.! ex spec.*

β. leaflets oblong, particularly the terminal one; leaves less crowded.—Hedysarum ciliare var. oblongifolium, *Ell. l. c.*

Dry hills and copses, New England States! and New York! to Florida! Louisiana! and Texas! July–Aug.—Plant rather stouter than the preceding species; the stems usually quite hairy, but sometimes rather smooth; the leaflets about the same size (or in β. rather larger), but always longer than the hairy petiole. Panicle scabrous-puberulent with uncinate hairs, as in D. Marilandicum; the lower racemes much elongated.—The flowers and fruit are wholly similar to the preceding species, from which there is scarcely any constant distinguishing character, except the very short hairy petioles.

14. *D. rigidum* (DC.): stem erect, branched, clothed with a rough pubescence; leaflets ovate-oblong, obtuse, reticulated, ciliate, scabrous above, hairy beneath, the lateral ones smallest, much longer than the hairy petiole; stipules ovate-lanceolate, acuminate, ciliate, caducous; racemes paniculate, erect, very long; segments of the calyx acute, the lower one longest; legumes of 2–3 semi-obovate or obliquely oval hispid joints.—*DC. l. c.; Darlingt.! fl. Cest. p.* 413. Hedysarum rigidum, *Ell. sk.* 3. *p.* 215.

Dry hill sides and open woodlands. Near Boston, *Dr. Boott!* and Southern part of the State of New York! and New Jersey! to Georgia! Tennessee, *Dr. Currey!* Arkansas, *Dr. Leavenworth!* Western Louisiana, *Dr. Hale!* Aug.–Sept.—Plant somewhat canescent. Stem 2–3 feet high, striate, usually with numerous long erect and rather rigid branches. Leaves a little coriaceous: leaflets 1–3 inches long.—The fruit scarcely differs from that of D. ciliare, from which the smaller varieties are, as Dr. Darlington remarks, not easily distinguished; on the other hand, the larger forms approach both D. Canadense and Dillenii; but the legumes are very different from either.

15. *D. sessilifolium:* stem erect, rather stout, tomentose-pubescent; leaves sessile; leaflets linear or linear-oblong, rather coriaceous, obtuse at each end, reticulated, scabrous above, tomentose with a soft pubescence beneath; stipules subulate, somewhat persistent; racemes paniculate, much elongated; pedicels very short; bracts minute; upper lip of the calyx slightly emarginate; the lower tooth a little longer than the triangular lateral ones; legumes small, nearly sessile, of 2–3 somewhat semi-orbicular hispid joints.—Hedysarum sessilifolium, *Torr.! mss. & in Curtis, cat. pl. Wilmingt.* excl. *β.*

Borders of woods and copses, Michigan! Ohio! Kentucky! Illinois! Arkansas! & Texas! Aug.—Stem 2–3 feet high, striate, simple, or paniculate at the summit. Leaflets 1½–2½ inches in length and 4–5 lines wide. Flowers crowded on the long and simple branches of the panicle, small. Legumes about half an inch long, the joints slightly convex on the back.—A very distinct species.

16. *D. tenuifolium:* stem erect, slender, branching, scabrous-pubescent above; leaves on short petioles, the upper ones often sessile; leaflets narrowly linear, obtuse, coriaceous, reticulated, very glabrous above, slightly pubescent beneath; stipules subulate, rather persistent; panicles elongated, very scabrous; bracts ovate, acute, very small; upper lip of the calyx slightly emarginate, about the length of the nearly equal lower teeth; legumes not stipitate, of 2–3 very small semi-oval or obliquely oval hispid joints.—Hedysarum sessilifolium *β.* angustifolium, *Torr.! in Curtis, cat. Wilmington plants, p.* 123.

In shady sandy places, Wilmington, North Carolina, *Mr. Curtis!* Florida, *Dr. Chapman!* Alabama, *Mr. Buckley!* Western Louisiana, *Dr. Hale!* Aug.–Sept.—Stem 2–3 feet high, with virgate branches. Lower leaves 2–3 or even 4 inches long, and about 2 lines wide; the upper ones shorter. Flowers smaller than in any other N. American species. Joints of the legumes less than two lines in length (slightly larger when a single one ripens), convex on the back.—This species greatly resembles D. strictum, and is distinguished by no essential character, excepting the size and form of the joints of the legume, which are only half as large: they are similar to those of D. sessilifolium, but are still smaller.

17. *D. strictum* (DC.): stem erect, mostly simple, strict and slender, glabrous or scabrous-puberulent; leaves on distinct petioles; leaflets narrowly linear, elongated, rather obtuse, mucronulate, coriaceous, reticulated, nearly glabrous; stipules subulate, rather persistent; panicle virgate, few-flowered; the pedicels very slender; bracts lanceolate; upper lip of the calyx slightly emarginate, the lower tooth longest; legume somewhat stipitate, uncinate-pubescent, 1–3-jointed; the joints semi-obovate and slightly concave on the back.—*DC. prodr.* 2. *p.* 329. Hedysarum strictum, *Pursh! fl.* 2. *p.* 483; *Nutt.! gen.* 2. *p.* 109. H. paniculatum, *Michx.! fl.* 2. *p.* 74.

In pine woods and barrens, New Jersey! to Florida! Alabama! and Louisiana! July–Sept.—Stem 2–4 feet high, straight, very slender, often branching towards the summit; the branches and racemes often very scabrous-pubescent. Leaves 1½–3 inches long, and only 2–3 lines wide, rigid. Flowers small. Legume often ripening but a single rather large joint.—In a specimen from Dr. Chapman, one of the stipelles is developed into a well-formed leaflet. We have noticed the same thing in D. Canadense.

18. *D. paniculatum* (DC.): stem erect, slender, and, with the petiolate leaves, nearly glabrous; leaflets membranaceous, oblong-lanceolate or sometimes linear-lanceolate, rather obtuse, the lower ones often oval-oblong; stipules subulate, deciduous; racemes paniculate, the pedicels long and slender; bracts lanceolate, hairy; upper lip of the calyx emarginate; the lower tooth much longest; legume on a short stipe, straight, minutely

uncinate-pubescent, of 3–5 triangular-rhomboid joints.—*DC.! l. c.*; *Darlingt.! l. c.* Hedysarum paniculatum, *Linn.! spec.* 2. *p.* 748; *Pursh! l. c.*; *Willd.! l. c.*; *Ell. l. c.*

β. angustifolium: leaves all narrower.

γ. pubens: stem puberulent; leaves oblong-lanceolate, rather rigid, pubescent, especially beneath.

Borders of woods, &c. Canada! to Florida! Louisiana! and Texas! *β.* Southern and Western States! *γ.* Tampa Bay, Florida, *Dr. Burrows!* Western Louisiana, *Dr. Hale!* July–Aug.—Stem 2-3 feet high. Leaflets 1–3 inches long, minutely pubescent with appressed hairs on both sides. Flowers purple. Legumes rather large; the joints oblong, distinctly angled on the back, so as to form an inequilateral rhomboid.

19. *D. rotundifolium* (DC.): stem prostrate, hirsute; leaflets orbicular, pubescent; stipules large, broadly ovate, acuminate, reflexed, persistent; racemes axillary and terminal; bracts resembling the stipules; calyx about equally 4-cleft, the upper segment 2-toothed, the lower a little longest; legumes minutely hispid, almost equally sinuate on both edges, with 3–5 rhomboid-oval joints.—*DC.! l. c.*; *Darlingt.! fl. Cest. p.* 330. Hedysarum rotundifolium, *Michx.! fl.* 2. *p.* 72; *Pursh! fl.* 2. *p.* 484; *Ell. sk.* 2. *p.* 213; *Bigel. fl. Bost. ed.* 2. *p.* 274.

In dry soil, New England States! and New York! to Georgia! Alabama! and Louisiana! Aug.—Stem somewhat branched, 2–4 feet in length, angular. Leaflets large, usually hairy on both sides and ciliate; the terminal one largest, and slightly rhomboid. Racemes rather few-flowered; the terminal ones often panicled. Corolla bright purple and violet. Legumes about an inch long.—Elliott and Dr. Darlington, on the authority of Muhlenberg, incorrectly consider this as the Hedysarum canescens of Willdenow; concerning which see note at the end of the genus.

20. *D. humifusum* (Beck): stem procumbent, striate, almost glabrous; leaflets oval, slightly pubescent; stipules ovate-lanceolate, persistent; racemes axillary and terminal; bracts resembling the stipules; upper lip of the calyx deeply 2-toothed; teeth of the lower lip very acute, the middle one prolonged; legumes minutely hispid, slightly sinuate or repand along the superior margin, on a short stipe, of 2–4 obtusely triangular joints.—*Beck, bot. p.* 86. Hedysarum humifusum, *Muhl. cat.*; *Bigel.! fl. Bost. ed.* 2. *p.* 274.

Massachusetts, near Boston, *Bigelow! Dr. Boott!* Near Lancaster, Pennsylvania, and Carolina (?), *Muhlenberg.* August.—Resembles D. rotundifolium, but the whole plant is much smoother, the leaves oval, the stipules and legumes also different. Muhlenberg, in his unpublished Flora Lancastriensis, remarks that he has H. humifusum both from New England and Carolina; but his description does not perfectly agree with the plant from Massachusetts, which alone we have seen.

21. *D. lineatum* (DC.): stem angled and finely striate, slightly pubescent; leaves on short petioles; leaflets (small) orbicular, nearly glabrous; stipules triangular-subulate, small, persistent; flowers mostly in terminal elongated loose panicles; upper lip of the calyx 2-cleft, the middle segment of the lower lip longest; legumes (small) sessile, minutely hispid, of about 3 nearly orbicular rather oblique joints.—*DC. prodr.* 2. *p.* 330; *Hook.! compan. to bot. mag.* 1. *p.* 23. Hedysarum lineatum, *Michx.! fl.* 2. *p.* 72; *Ell. sk.* 2. *p.* 214.

Carolina, *Michaux!* Virginia, *Mr. Curtis!* Middle Florida, *Dr. Alexander! Dr. Chapman!* Alabama, *Mr. Buckley!* Louisiana, *Drummond! Dr. Hale!*—This very distinct species derives its name from the finely striate stems. The leaves resemble those of D. rotundifolium, but are very much smaller than the ordinary forms of that species.

The species of this extremely difficult genus present such diversities, and often appear to approach each other by such gradations, that it is by no means easy to define them properly. The most constant characters may commonly be derived from the form of the joints of the legume; but these are frequently slight and not easy to be expressed in words. Having obtained additional materials and information since our account of the earlier portion of this genus was published (Oct. 1838; to spec. no. 8. p. 360), we append a few notes on the subject.

The genus Ototropis, *N. ab E.* (*delect. sem. hort. Vratisl.* 1838, *p.* 3.) would include many of our species, so far as the calyx is concerned, and several agree with it in the form of the legumes; but in this respect every gradation may be observed, and other species which agree with Ototropis in fruit have a very different calyx; so that we see not how it can be adopted even as a section. It should have been stated, perhaps, in the generic character of Desmodium, that the upper lip of the calyx is often entire, and sometimes the calyx is nearly equally 4- or 5-toothed. The joints of the pod are reticulated and more or less hispid with uncinate hairs in all our species.

D. Canadense, DC.! (Hedysarum Canadense, *Linn. hort. Cliff.! & spec.!*) To the character should be added: Petioles very much shorter than the leaflets; stipules rather persistent; legumes nearly sessile (much smaller than in D. canescens), of about 5 roundish rather oblique joints.

β. longifolium: leaflets lanceolate-ovate, membranaceous; stipules lanceolate; racemes more lax.—D. longifolium, *Nutt.! mss.*—Arkansas, *Nuttall! Dr. Pitcher!*—We have specimens intermediate between this and the ordinary form of the species, collected in Illinois by Mr. Buckley. The petioles in D. Canadense are ordinarily scarcely longer than the petiolule of the terminal leaflets; but this variety somewhat approaches D. canescens.

D. canescens, DC. (ex syn. & descr.) Hedysarum canescens, *Linn. hort. Cliff.!* (1737) *& ex syn. Gronov.!* not of *hort. Ups.!* (1748), which is a Jamaica plant; excluding also the syn. H. triphyllum, &c. *Sloane!* and Onobrychis Americana, floribus spicatis. &c. *Pluk.!* which both relate to another West Indian species. H. viridiflorum, *Willd.! Pursh! &c.* D. viridiflorum, *DC.! &c.*—The H. canescens, *Willd.!* is the Linnæan plant of the Hortus Upsalensis. Our plant is accordingly, as we supposed, the original H. canescens, according to the specimen in the herbarium of the Hortus Cliffortianus, now belonging to the British Museum. The proper herbarium of Linnæus contains the plant of the Hortus Upsalensis only. It is the former which Linnæus compares with H. Canadense (also established in Hort. Cliff.) To distinguish it more perfectly from this as well as the two species with which Linnæus confounded it, we add the following characters: Petioles about the length of the broadly ovate leaflets, which are reticulated beneath, and scabrous on both sides, but especially beneath, with long and stiff appressed hairs and a minute uncinate pubescence; legume with a short stipe.

β. villosissimum: panicle and upper part of the stem very villous; leaflets oblong-ovate; upper lip of the calyx sometimes very deeply cleft.—D. Canadense, var. *Hook. & Arn. compan. to bot. mag.* 1. *p.* 22.—St. Louis, Missouri, *Drummond!*

D. Dillenii, Darlingt. (D. Boottii, *Torr.! in Curtis, cat. Wilmingt. pl.* Hedysarum Marilandicum, *Willd.!*)—The joints of the legume were accidentally described as oblong instead of rhomboid. It varies greatly in the size of the leaves, which are sometimes obtuse at both ends, and sometimes acute.

D. viridiflorum, Beck.—Stem *scabrous* towards the summit; stipules rather persistent.—In specimens from Florida, recently received, with mature fruit, we find the legumes somewhat even on the back; the joints slightly convex on that side, and much dilated and rounded below, so as to assume a rather semi-orbicular outline. The old leaves are less tomentose beneath. We have another form from Louisiana (*Dr. Hale*) with ovate-oblong leaves, and the joints of the young legumes somewhat rhomboidal. Possibly two or more species are confounded under this name.

Hedysarum volubile, *Linn.* (founded on *Dill. Elth. t.* 143, *f.* 170.) is Galactia pilosa or G. mollis.

44. LESPEDEZA. *Michx. fl.* 2. *p.* 70, *t.* 39 & 40.

Calyx with 2 persistent bracteoles at its base, deeply 5-cleft; the segments linear-lanceolate or subulate, nearly equal, the two upper ones sometimes more or less united. Corolla inserted into the base of the calyx: vexillum roundish or oblong, somewhat unguiculate, more or less appendiculate at the base by the inflexed margins: wings nearly straight, as long as the keel, often auriculate at the base on one side, and, as well as the very obtuse slightly curved keel-petals, on slender claws. Stamens diadelphous (9 & 1): anthers uniform. Style filiform: stigma capitate. Legume lenticular, mostly flat, small, reticulated, unarmed, indehiscent, 1-seeded.—Perennial herbs or suffrutescent plants, with pinnately trifoliolate reticulated leaves. Stipules setaceous or subulate: stipelles none. Flowers in axillary pedunculate spikes or racemes, and often with other apetalous and imperfect but fertile ones, mostly in subsessile glomerules. Bracts minute, 3 together, 1-2-flowered.

§ 1. *Flowers of two kinds, viz: perfect, although seldom maturing fruit; and fertile but mostly destitute of stamens and petals; the latter either on the same few-flowered peduncles, or in subsessile glomerules: calyx slightly bilabiate, the 2 superior segments often united at the base: corolla violet and purple, longer than the calyx: stems diffuse, procumbent, or erect.*—Eulespedeza.

The fruit, in this section, is chiefly produced by the apetalous flowers, which are small and commonly escape notice until the legumes are formed. The style, in these flowers, is short and hooked, as in Amphicarpæa and other analogous cases; and by this character the two kinds of legumes may be distinguished. The ovary is not naked, as in Stylosanthes, Chapmannia, and other genera of this tribe, but is surrounded by a calyx, and the rudiments of petals and filaments may sometimes be detected. A knowledge of this circumstance will render our species much better understood than formerly. Authors have sometimes described the calyx from the apetalous flowers, where it is mostly smaller, which has caused some discrepancies. Little reliance is to be placed upon the degree of union of the two upper segments of the calyx: in L. repens and L. procumbens they are sometimes united almost to the tip, and again distinct nearly to the base.

1. *L. procumbens* (Michx.): tomentose-pubescent throughout except the upper surface of the leaves, prostrate; the branches assurgent; leaflets oval or elliptical, mostly retuse, the uppermost often obovate; peduncles axillary, simple, elongated, sometimes a little paniculate at the extremity of the branches, few-flowered; apetalous flowers occupying the lower peduncles, and also often subsessile in the axils of the lower leaves; legumes minutely pubescent, nearly orbicular.—*Michx.! fl.* 2. *p.* 70, *t.* 39; *Pursh! fl.* 2. *p.* 481; *Nutt.! gen.* 2. *p.* 108; *Ell. sk.* 2. *p.* 408; *DC.! prodr.* 2. *p.* 350; *Darlingt.! fl. Cest. p.* 422. Hedysarum repens, *Willd.! sp.* 3. *p.* 1200. H. Lespedeza, *Poir. dict.* ex *DC.*

Sandy soil, Massachusetts! to Florida! and Louisiana. Aug.–Sept.—Stems several from the same root, 2–3 feet long, very densely pubescent with soft spreading hairs. Petioles of the lower leaves as long as the leaflets; those of the branches often very short. Corolla purple tinged with violet. Legumes pubescent, about 1½ line in length and almost as wide as long.—We have never observed a 2-jointed legume in this species.

2. *L. repens:* prostrate or diffusely procumbent, minutely pubescent with closely appressed hairs, or nearly glabrous; leaflets oval or obovate-elliptical, glabrous above, the uppermost emarginate or somewhat obcordate; petioles mostly very short; peduncles axillary, filiform, simple, few-flowered; the lower ones (sometimes short) bearing apetalous flowers; legumes minutely pubescent, nearly orbicular.—L. repens, *Bart. prodr. fl. Philad.?* L. prostrata, *Pursh, l. c.; Nutt.! l. c.; DC.! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 156. Hedysarum repens, *Linn.! spec. (ed.* 1.*)* 2. *p.* 749 (pl. Gronov.!), *& ed.* 2. *p.* 1056, excl. syn. *Dill. Elth.* H. prostratum, *Willd.! l. c.*

Dry sandy soil (Upper Canada, ex *Hook.*), New Jersey! to Georgia! west to Kentucky! and Louisiana! Aug–Sept.—Stems several from the same root, often simple, very slender. Legumes as in the preceding species; from which it scarcely differs except in the kind and degree of the pubescence, the rather smaller flowers, and more slender habit. The very short petioles are not wholly constant, and equally exist in some states of L. procumbens. —Hedysarum repens of Linnæus was founded entirely upon the Virginian plant, and not upon *Dill. Elth. t.* 142, *f.* 169 (a Ceylonese Desmodium), as has been supposed; for the reference to Dillenius only makes its appearance in the second edition of the Species Plantarum, and Virginia is the only habitat given: hence we have restored the original specific name.

3. *L. violacea* (Pers.): stem erect or diffuse, pubescent, branching; leaflets varying from oval-oblong to linear, hairy or canescent with appresed pubescence beneath, equalling or longer than the petiole; racemes axillary, few-flowered, sometimes shorter than the leaves, and sometimes in part exserted on slender peduncles; apetalous flowers glomerate and subsessile in the axils of the leaves; legumes minutely pubescent with short appressed hairs, or nearly glabrous, ovate, much longer than the calyx.—*Pers. syn.* 2. *p.* 318; *Pursh! l. c.* Hedysarum violaceum, *Linn.! spec.* 2. *p.* 749 (excl. syn. *Gronov.!*); *Willd.! l. c.* H. frutescens, *Linn.! l. c.* (*pl. Gronov.!*)

α. divergens: peduncles toward the extremity of the branches filiform and much longer than the leaves, the flowers rarely producing fruit; leaflets oval or oblong.—L. divergens, *Pursh! l. c.; DC. l. c.* Hedysarum divergens, *Willd.! l. c.*

β. sessiliflora: flowers somewhat glomerate on peduncles much shorter than the leaves; those at the base chiefly apetalous and fertile; leaflets oblong or elliptical.—L. sessiliflora, *Michx. l. c.* (partly); *Pursh! l. c.; Nutt. l. c.; DC. l. c.; Ell. l. c.; Darlingt. fl. Cest. p.* 420. Hedysarum violaceum, *Linn.!* in part; *Willd.! l. c.* (Varies with the leaflets slightly pubescent and almost tomentose beneath.)

γ. angustifolia: peduncles short; the flowers glomerate toward the extremity of the branches; petioles slender, mostly erect; leaves much crowded above and fascicled on short branchlets; leaflets narrowly oblong or linear.—L. reticulata, *Pers. l. c.; Nutt.! l. c.; DC.! l. c.; Darlingt. l. c.* L. sessiliflora, partly, *Michx.! l. c.* L. angustifolia, *Darlingt. l. c. ed.* 1. L. frutescens, *DC. l. c.*, not of *Ell.* Hedysarum reticulatum, *Willd.! l. c.* H. junceum, *Walt.* Medicago Virginica, *Linn.! l. c.* (pl. Gronov.!) (Varies with the leaves somewhat hairy beneath to canescently tomentose.)

Borders of woods and thickets, Canada! and Northern States! to Florida! and Louisiana! Aug.–Sept.—The Hedysarum violaceum of Linnæus includes both L. divergens and L. sessiliflora, and to the same species L. reticulata must certainly be referred. In comparing the size of the legume with the calyx, it should be remembered that the petaliferous flowers in this species seldom perfect fruit, and that the calyx of the apetalous ones is smaller. The narrow-leaved variety is perhaps always erect.

4. *L. Stuvei* (Nutt.): stem nearly erect, branching, tomentose-pubescent; leaflets oval or roundish, pubescent or silky-tomentose, longer than the

petiole; racemes axillary, many-flowered; apetalous flowers few; legumes villous-pubescent, ovate, acuminate, rather longer than the calyx.

α. stem tomentose; leaflets oval, villous-canescent on both sides, especially beneath; peduncles crowded, about the length of the leaves.—L. Stuvei, *Nutt.! gen.* 2. *p.* 107. L. violacea, *Ell.?*

β. leaflets oval or obovate-oval, rather glabrous above, silky pubescent beneath; racemes spicate, dense, sometimes loose and much longer than the leaves.—L. Stuvei, *Ell.?*

γ. leaflets oval, ovate, and obovate, somewhat villous beneath; racemes spicate, elongated, rather loosely flowered, on peduncles longer than the leaves.—L. Stuvei, *Darlingt. fl. Cest. ed.* 1. L. virgata, *Nutt.! mss.* L. Nuttallii, *Darlingt. l. c. ed.* 2. *p.* 420.

Dry hills, Northern States, especially New Jersey! to Louisiana! Arkansas! and Texas! Aug.–Sept.—This species appears to assume a variety of forms, and is not easily defined. It is, as it were, intermediate between L. violacea and L. hirta; some forms approaching the former so as to be essentially distinguished only by the many-flowered peduncles, more hairy legumes, and few apetalous flowers; while others differ from L. hirta chiefly in the purple flowers, smaller leaflets, rather shorter calyx, longer and less villous and more pointed legumes, &c. and connect this section with the succeeding.

§ 2. *Flowers all fertile and perfect, in dense or capitate spikes: corolla about the length of the calyx, white or ochroleucous, with a purple spot on the vexillum: stems erect.*—Lespedezaria.

5. *L. hirta* (Ell.): stem erect, branching above, villous or tomentose; leaflets roundish-oval or somewhat obovate, emarginate, pubescent or silky, mostly longer than the petiole; spikes oblong or cylindrical; the peduncles at length much longer than the leaves; calyx very hairy; the segments linear-lanceolate, acuminate, somewhat 3-nerved, scarcely exceeding the oval villous legume.—*Ell. sk.* 2. *p.* 207; *Torr.! compend. p.* 267. L. polystachya, *Michx.! fl.* 2. *p.* 71, *t.* 40; *Pursh, l. c.; DC.! l. c.; Hook. fl. Bor.-Am.* 1. *p.* 156; *Darlingt. fl. Cest. p.* 421. L. villosa, *Pers. syn.* 2. *p.* 318; *DC. l. c.* Hedysarum hirtum, *Linn.! spec.* 2. *p.* 748; *Willd.! spec.* 3. *p.* 1193. H. villosum, *Willd.?*

β. *sparsiflora:* more slender; spikes elongated, loosely flowered.

Dry hills, Canada! and New England States! to Florida and Louisiana! Aug.–Sept.—Stem 2–4 feet high. Leaflets pubescent with appressed hairs, often nearly glabrous above, sometimes silky on both sides. Corolla ochroleucous, with a purple spot on the vexillum, somewhat exceeding the calyx. Legume turgid when ripe.

6. *L. capitata* (Michx.): stem erect, nearly simple, villous-pubescent; leaves on very short petioles; leaflets varying from elliptical to linear, rather coriaceous, reticulated, silky beneath; spikes capitate on short peduncles; calyx very hairy; the segments strongly 3-nerved when old, much longer than the oval villous-pubescent legume.—*Michx.! fl.* 2. *p.* 71; *Pursh! fl.* 2. *p.* 480; *Nutt. l. c.; Bigel. fl. Bost. ed.* 2. *p.* 272; *DC.! prodr.* 2. *p.* 349; *Beck! bot. p.* 87. L. frutescens, *Ell. sk.* 2. *p.* 206; *Beck! l. c.; Darlingt.! fl. Cest. p.* 421. L. fruticosa, *Pers. syn.* 2. *p.* 318. Hedysarum frutescens, *Willd.! sp.* 3. *p.* 1193, not of *Linn. spec. ed.* 1 (*pl. Gronov.!*) which is L. violacea! H. conglomeratum, *Poir*, ex *DC.*

α. *vulgaris:* leaflets elliptical-oblong, glabrous or somewhat pubescent above.

β. *longifolia:* leaflets oblong or lanceolate, glabrous above.—L. longifolia, *DC.! prodr.* 2. *p.* 349.

γ. angustifolia (Pursh !): leaflets linear, narrow, elongated, glabrous above; peduncles longer.—L. angustifolia, *Ell. l. c.; DC. l. c.*

δ. sericea (Hook. & Arn.): stem much branched, densely villous; leaflets linear-oblong, very silky and shining on both sides.—*Hook. & Arn.! compan. to bot. mag.* 1. *p.* 23.

Dry rather barren soils, Canada and New England States! to the upper district of South Carolina; west to Arkansas! *β.* Kentucky! to Louisiana! *γ.* New York! and New Jersey! (in pine-barrens) to Florida! and Louisiana! *δ.* Louisiana, *Drummond.* Arkansas, *Nuttall! Dr. Pitcher!* Aug.–Sept.—Stem 2–4 feet high, wholly herbaceous. Calyx-segments lanceolate-subulate. Corolla white: vexillum oblong, scarcely spreading, with a purple spot near the base: wings narrow, scarcely auricled at the base.—This plant has been generally supposed to be the Hedysarum frutescens of Linnæus; but that species was founded on a plant of Clayton's (H. fol. ternatis; foliolis subovatis, &c. *Gronov.! Virg.*), which, as our most esteemed friend Dr. Boott first observed, is Linnæus's own H. violaceum, while the synonym of Gronovius, adduced under the latter species, belongs to Psoralea melilotoides! But the reference to *Mill. dict.* in the second edition of the Species Plantarum doubtless relates to the present species.

Arachis hypogæa (the *Pea-nut*) was sent in the late Mr. Drummond's collection, from Covington, Louisiana; but the specimens were doubtless cultivated.

Psoralea, *Linn.* should doubtless be referred to the tribe Hedysareæ; as Mr. Bentham has suggested.

TRIBE VII. GENISTEÆ. *DC.*

Corolla papilionaceous. Stamens 10, monadelphous: anthers of two forms. Legume continuous, 1-celled, sometimes intercepted internally, but not jointed. Radicle incurved or inflexed.—Herbs or shrubs. Leaves simple or palmately compound, not stipellate.

45. GENISTA. *Linn.; Lam. ill. t.* 619; *DC. prodr.* 2. *p.* 145.

Calyx bilabiate; the upper lip 2-parted, the lower 3-toothed. Vexillum oblong-oval: keel oblong, straight, scarcely including the stamens and style. Stamens monadelphous; the sheath entire: the 5 alternate anthers shorter. Legume compressed, or rarely somewhat turgid, many-seeded, not glandular.—Shrubby or suffruticose plants, with simple leaves and yellow flowers.

1. *G. tinctoria* (Linn.): root creeping; stems somewhat erect; the branches terete, striate; leaves lanceolate, nearly glabrous; flowers in spicate racemes; legumes, as well as the corolla, glabrous. *DC.*—*Linn. spec.* 2. *p.* 710; *Engl. bot. t.* 44; *Bigel.! fl. Bost. ed.* 2. *p.* 267.

On hills, &c. near Salem, Massachusetts, *Bigelow!* Also at Danvers, *Mr. Oakes!* Introduced from Europe, but naturalized. June–July.—*Dyer's-weed. Wood-waxen.*

46. CROTALARIA. *Linn.; Gærtn. fr. t.* 148; *Lam. ill. t.* 617.

Calyx 5-cleft, somewhat bilabiate; the upper lip 2-, the lower 3-cleft. Vexillum very large, cordate: wings foveolate-plicate towards the base: keel falcate, pointed or rarely obtuse. Stamens monadelphous; the sheath cleft on the upper side: anthers opposite the sepals oblong, the 5 alternate ones smaller and roundish. Legume turgid, the valves ventricose-inflated. Seeds usually several, compressed, reniform.—Herbaceous or shrubby plants. Leaves simple or palmately compound. Flowers racemose, usually yellow. Bracteoles usually 1–2 at the base of the calyx.

The few North American species of this large genus are herbaceous, with simple leaves, few-flowered racemes opposite the leaves, and much inflated several-seeded legumes, which turn blackish when fully ripe.

1. *C. sagittalis* (Linn.): annual, hairy; stem erect, branching; leaves oval or oblong-lanceolate, scarcely petioled; stipules united and decurrent on the stem, obversely sagittate; peduncles rather short, about 3-flowered; corolla rather shorter than the calyx; legume scarcely stipitate.—*Linn.! spec.* 2. *p.* 714; *Michx.! fl.* 2. *p.* 55 (var. oblonga); *Pursh! fl.* 2. *p.* 469; *Ell. sk.* 2. *p.* 293; *DC. prodr.* 2. *p.* 124; *Darlingt. fl. Cest. p.* 404. C. parviflora, *Roth; Willd. spec.* 3. *p.* 973? C. platycarpa, *Link, enum.* 2. *p.* 227.
Dry sandy banks and roadsides, Connecticut! and New York! to Florida! Louisiana! and Arkansas! common. May–July.—Stem 4–8 inches, or sometimes a foot or more in height, hirsute. Leaves 1–2 inches long, varying from oval to lanceolate, pubescent with long soft hairs. Stipules of nearly all, but especially of the upper leaves, large, the free portion triangular-lanceolate; occasionally the stipules are wholly wanting. Seeds small, shining, at length becoming loose and rattling in the parchment-like inflated legume.—*Rattlebox.*

2. *C. Purshii* (DC.): perennial, minutely hirsute with short and stiff much appressed hairs, or at length almost glabrous; stems branching, erect; leaves linear or linear-oblong, nearly sessile; stipules narrowly decurrent, the free portion subulate; peduncles elongated, 3–7-flowered; corolla as long as the calyx.—*DC. l. c.?* C. lævigata, *Pursh l. c.?* not of *Lam.* C. parviflora, *Pursh, l. c.; Ell. l. c.; DC. l. c.*, not of *Roth.*
"In damp or shady soils," S. Carolina! to Alabama! Florida and Louisiana! April–July.—Stem 8–18 inches high. Leaves 2–3 inches long, linear and very narrow; the lower ones shorter and broader, oblanceolate or oblong, acute at the base. Peduncles often 6–8 inches in length. Flowers about the size of those of the preceding species.—The C. parviflora of Roth, judging from his description, must be something different from this species, and more probably belongs to C. sagittalis. This is, however, the C. parviflora of Pursh (who has slightly altered the character of Willdenow), and of Elliott. As to C. lævigata, *Pursh*, as well as the figure cited from Plukenet, we are in doubt whether they do not belong to C. sagittalis: but the character of C. Purshii is most probably drawn from the present species. The plant is decidedly perennial. Should C. sagittalis prove to be sometimes perennial, as is perhaps the case, no important character would remain to distinguish the present species.

3. *C. ovalis* (Pursh): perennial, hairy; stems branching from the base, diffuse, decumbent; leaves oval or elliptic, on very short but distinct petioles; stipules small, those at the base of the branches usually larger and decurrent, the others minute and subulate or often wanting; peduncles elongated, 3–6-flowered; corolla as long as the calyx; legume shortly stipitate.—*Pursh, l. c.; Ell. sk.* 2. *p.* 194; *Nutt. gen.* 2. *p.* 94; *DC. l. c.; Hook. bot. mag. t.* 3006 (from Mexican seeds). C. sagittalis *β.* ovalis, *Michx.! l. c.*
In dry barren soils, N. Carolina! to Florida! and Louisiana! May–July.—Root fusiform, long. Leaves about an inch long, roundish-oval, pubescent with rather soft appressed hairs. Peduncles sometimes 6–10 inches

in length. Flowers rather larger than in C. sagittalis; from which the species is wholly distinct.

47. LUPINUS. *Tourn.; Gærtn. fr. t.* 150; *J. G. Agardh, synop. gen. Lupin.* (1835.)

Calyx deeply bilabiate, often 2-bracteolate; the upper lip 2-cleft or toothed, or rarely entire; the lower entire or 3-toothed. Vexillum with the sides reflexed: wings foveolate-plicate towards the base, united at the summit: keel falcate, acuminate. Stamens monadelphous; the sheath entire: alternate filaments longer: the 5 anthers opposite the sepals oblong and earlier matured; those opposite the petals roundish or reniform and later. Stigma bearded. Legume coriaceous, somewhat oblong, more or less compressed, often torulose or intercepted with cellular partitions. Cotyledons fleshy.—Herbaceous or rarely shrubby plants. Leaves palmately 5–15-foliolate, or rarely reduced to a single leaflet. Stipules either free or adnate to the petiole. Flowers in terminal racemes or spikes.—*Lupine.*

§ 1. *Annual: leaflets several: legumes more or less interrupted or constricted between the seeds, dehiscent the following year.*

* *Legumes intercepted with cellular partitions between the seeds: cotyledons thick and large, sessile or nearly so in germination: primordial leaves evident in the seed, opposite.* Agardh.

† **Stem somewhat naked: spike elongated, with numerous flowers in regular whorls: seeds elliptical, compressed, smooth.** *Agardh.*

1. *L. Menziesii* (Agardh): flowers verticellate in a very long spike, pedicellate; the pedicels about the length of the somewhat setaceous persistent bracts; calyx without bracteoles, the lips entire; the upper one scarious, about half the length of the lower herbaceous one. *Agardh! syn. gen. Lupin. p.* 2; *Hook. & Arn.! bot. Beechey, suppl. p.* 335.
California, *Douglas!*—Silky-pubescent. Peduncle elongated. Leaflets obovate-spatulate, nearly half the length of the petiole, the apex mucronate and recurved. Whorls distant. Calyx pubescent. Corolla yellow.

2. *L. microcarpus* (Sims): flowers verticillate in an elongated spike, nearly sessile; bracts subulate, persistent; about the length of the somewhat 2-cleft upper lip of the ebracteolate calyx, and about half the length of the 3-toothed lower lip. *Agardh.—Sims, bot. mag. t.* 2413; *DC. prodr.* 2. *p.* 408; *Agardh! l. c.; Hook. & Arn. l. c.*
California, *Douglas!*—This species is a native of Chili, and Agardh remarks that he cannot distinguish the Californian specimens, except that the flowers are perhaps a little smaller and the petioles longer. Leaves clustered at the base of the stem. Stem about a foot high, and with the petioles and lower surface of the leaves, a little villous. Calyx densely villous. Corolla purplish-blue: vexillum yellowish in the centre, with purple spots. Legume 2-seeded.

3. *L. densiflorus* (Benth.): flowers verticillate in a dense spike, subsessile; bracts persistent, reflexed, about the length of the corolla; calyx ebracteolate; the upper lip emarginate, half the length of the very villous 3-toothed lower one. *Agardh.—Benth.! in hort. trans.* (*n. ser.*) 1. *p.* 409; *Lindl. bot. reg. t.* 1689; *Agardh! l. c. p.* 3; *Hook. & Arn.! l. c.*

Benth. [illegible]

p. 363.

California, *Douglas !*—A stouter plant than the preceding, and more villous with long soft hairs. Leaflets oblong-spatulate. Flowers white, stained with pink. Legumes villous, 2-seeded.

† † Stem leafy, branching: leaflets mostly spatulate: flowers somewhat verticillate, bracteolate: upper lip of the calyx 2-cleft or 2-parted: seeds large, somewhat reniform, compressed, colored, roughish. ***Agardh.***

4. *L. hirsutissimus* (Benth.): very hirsute with bristly hairs; stem low, nearly erect; leaflets obovate-cuneiform, mucronulate; stipules subulate; flowers mostly alternate, on short pedicels; bracts subulate, about the length of the calyx; bracteoles caducous; lips of the calyx nearly equal; the upper one deeply 2-cleft, the lower entire.—*Benth.! in hort. trans. l. c. p.* 409; *Agardh! l. c. p.* 4.

California, *Douglas !*—A very distinct but not ornamental species, clothed throughout with long and rigid spreading bristly hairs. Flowers reddish-purple.

5. *L. gracilis* (Agardh): small, diffuse, very hairy; leaflets minute, obovate-cuneiform, canaliculate; peduncle short; flowers on short pedicels, few, alternately disposed along the very flexuous rachis; bracts setaceous, persistent, longer than the pedicels; calyx bracteolate; the upper lip 2-parted, the lower somewhat 3-toothed; legumes hirsute, about 5-seeded.—*Agardh! l. c. p.* 15, *t.* 1, *f.* 2, not of *Nutt.* L. microphyllus, *Nutt.! mss.* not of *Desrouss.*

California, *Douglas !* Plains of St. Diego, *Nuttall !*—Plant 4–6 inches high. Leaflets 4–5 lines in length, hirsute, many times shorter than the petioles. Flowers 7–10, at length rather remote. Corolla blue and white, *Nutt.* (purplish-rose color, *Agardh*); the wings longer than the vexillum.—A small and very distinct species, allied to L. bicolor.

6. *L. concinnus* (Agardh): small, very densely villous with soft whitish hairs; leaves mostly radical; leaflets spatulate; stipules subulate-setaceous; flowers a little alternate, in a close ovate spike, on very short pedicels; bracts linear-subulate, shorter than the mostly ebracteolate calyx; the upper lip 2-cleft, the lower entire or 3-denticulate.—*Agardh! l. c. p.* 6, *t.* 1, *f.* 1; *Hook. & Arn.! l. c.*

California, *Douglas !*—Plant 4–6 inches high, densely clothed with very long hairs; those of the leaves equal to the width of the leaflets themselves. Flowers violet, with a yellow spot on the vexillum.

7. *L. subcarnosus* (Hook.): stem silky pubescent; leaflets 5 [7], obovate-lanceolate, obtuse or retuse, somewhat fleshy, glabrous above, silky beneath and on the margins; stipules setaceous-subulate; raceme pyramidal; pedicels alternate, about the length of the flowers; calyx silky, bracteolate; the upper lip shorter, 2-cleft; the lower lanceolate and 3-toothed at the apex, the intermediate tooth longest; vexillum orbicular, deep blue, with a white spot in the middle divided by a longitudinal fold. *Hook.! bot. mag. t.* 3467.

Bejar, Texas, *Berendier*, (Berlandier ?) ex *Hook.* Brazoria, *Drummond!*—Stem 8–10 inches high. Legumes linear-oblong, about 1½ inch in length, silky-tomentose, 4–5-seeded. *Hook.*—In the wild specimens the young leaflets are hairy on both sides.

8. *L. Texensis* (Hook.): stem silky-pubescent; leaflets 5, lanceolate, rather acute, glabrous above, silky beneath and on the margins; stipules subulate; raceme pyramidal; pedicels alternate, as long as the flowers; calyx silky, bracteolate; the upper lip shorter, 2-cleft, the lower acuminate and entire; vexillum orbicular, deep blue, with a white spot in the middle divi-

ded by a longitudinal fold. *Hook. bot. mag. t.* 3492. L. bimaculatus, *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 314 ? not of *Lam.*

San Felipe, Texas, *Drummond.*—Much resembles L. subcarnosus, but appears distinct: its habit stouter, the leaves neither fleshy nor retuse, the flowers deeper colored, and the wings more projecting. *Hook.*

† † † Stem somewhat decumbent, leafy: leaflets mostly linear, canaliculate: flowers alternate or verticellate: upper lip of the calyx 2-parted: seeds roundish, turgid, colored, smooth. ***Agardh.***

9. *L. nanus* (Dougl.): somewhat hairy, low; stems decumbent; leaflets linear-spatulate; raceme elongated, the flowers verticillate; bracts lanceolate, as long as the flowers, caducous; calyx silky, ebracteolate; the upper lip 2-cleft, the lower emarginate.—*Benth.! l. c. p.* 409, *t.* 14, *f.* 2; *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 257; *Agardh! l. c. p.* 11.

California, *Douglas!*—Stems 6–8 inches high. Flowers large, regularly verticillate in somewhat distant whorls, bluish-purple. Legumes about 3-seeded, silky-pubescent when young.

10. *L. leptophyllus* (Benth.): hairy; stems erect; leaflets narrowly linear; raceme spicate, with the flowers approximate and somewhat alternate; bracts linear-subulate, villous, much longer than the flowers and comose before their expansion; calyx minutely bracteolate; the upper lip 2-parted, the lower 3-toothed.—*Benth.! l. c. p.* 409; *Lindl.! bot. reg. t.* 1670; *Agardh! l. c. p.* 11.

California, *Douglas!*—Stems 1–2 feet high, sparsely hirsute with spreading hairs. Leaflets very narrow, 1–1½ inch long. Flowers bluish-lilac, with a deep crimson stain on the middle of the vexillum.

11. *L. truncatus* (Nutt.! mss.): pubescent with appressed hairs, at length almost glabrous; leaflets 5–7, linear, attenuate at the base, truncate or somewhat 3-toothed at the apex; stipules minute, linear, short; raceme elongated, the flowers alternate; bracts shorter than the pedicels, subulate, persistent; calyx bracteolate, the upper lip 2-parted, the lower minutely 3-toothed or entire; legume hirsute, elongated, 6–7-seeded.—*Hook. & Arn.! bot. Beechey, suppl. p.* 336.

St. Francisco, California, *Douglas!* St. Diego, *Nuttall!*—"Flowers deep purple, small; the vexillum shorter than the wings. Leaflets rather succulent, long and narrow." *Nutt.*—Resembles L. linifolius and L. angustifolius, to which latter species an imperfect specimen from California is doubtfully referred by Agardh.

**** * Legumes constricted but scarcely interrupted between the seeds: cotyledons smaller and less thick, petiolate in germination: primordial leaves not evident before germination, alternate.*** Agardh.

12. *L. micranthus* (Dougl.): hairy; leaves narrowly lanceolate, canaliculate; peduncle elongated; flowers somewhat verticillate (few), on very short pedicels; calyx bracteolate, the upper lip 2-cleft; the lower entire, a little shorter than the petals; legumes 6-seeded. *Agardh.—Dougl.! in bot. reg. t.* 1251; *Agardh, l. c. p.* 14.

In gravelly places, along the southern tributaries of the Oregon, and in the interior of California, *Douglas!*—Differs from L. bicolor, according to Douglas, in flowering from 4 to 6 weeks earlier, in being more slender, in the shorter wings of the corolla, nearly sessile flowers, fleshy leaves, larger pods, the color and size of the seeds, and granulated roots; to which Agardh adds the leaves glabrous on the upper surface; but Nuttall remarks that the roots of L. bicolor are often granulated, and the upper surface of the lower leaves is nearly smooth. In the dried state the two plants do not appear very distinct.

13. *L. bicolor* (Lindl.): hairy; leaflets narrowly somewhat lanceolate, canaliculate; peduncle elongated, the flowers somewhat verticillate; calyx ebracteolate, the upper lip 2-cleft; the lower entire, half the length of the wings, scarcely longer than the pedicels; legumes 6–7-seeded. *Agardh.—Lindl. bot. reg. t.* 1109; *Hook.! fl. Bor.-Am.* 1. *p.* 162; *Agardh! l. c. p.* 14.

In the shade of pine trees, Oregon, common, *Douglas! Nuttall!* Also in California, *Menzies! Douglas!*—Stems low, procumbent, branching. Stipules long, subulate. Flowers blue and white, verticillate in a short raceme; the wings much longer than the vexillum. 2 -

14. *L. pusillus* (Pursh.): very hirsute, dwarf, much branched from the base; leaflets 5–7, lanceolate-oblong, obtuse, narrowed at the base, the upper surface nearly glabrous; raceme spicate, on a short peduncle, the flowers alternate; bracts nearly the length of the calyx, persistent; calyx ebracteolate; the upper lip 2-cleft, shorter than the obscurely 3-toothed lower one; legumes hirsute, about 2-seeded.—*Pursh! fl.* 2. *p.* 468; *Nutt.! gen.* 2. *p.* 93; *Torr.! in ann. lyc. New York*, 2. *p.* 191; *Hook! fl. Bor.-Am.* 1. *p.* 162; *Agardh! l. c. p.* 15.

Barren argillaceous plains of the Missouri, *Lewis! Nuttall! Dr. James!* and on the barren grounds of the Oregon, *Douglas!*—Plant 4–6 inches high. Stipules adnate. Raceme scarcely longer than the leaves, 8–12-flowered. Corolla bright blue.

§ 2. *Perennial: leaflets several: legumes dehiscent at maturity; the valves often twisting spirally.*

* ***Legumes several-seeded: seeds somewhat ovate; the hilum occupying nearly the whole narrower extremity of the seed: cotyledons erect and petiolate in germination: primordial leaves not evident in the seed, alternate: stem annual or persistent, not shrubby.*** Agardh.

† **Stem mostly tall and erect, fistulous, somewhat glabrous, herbaceous: stipules setaceous: racemes much elongated: flowers not very large: calyx mostly ebracteolate, the lips nearly entire.** ***Agardh.***

15. *L. minimus* (Dougl.): small; stem somewhat leafless; leaflets 7–9, obovate-lanceolate, silky on both sides; stipules setaceous; flowers somewhat verticillate in an elongated spike; bracts nearly as long as the calyx; calyx ebracteolate; the upper lip somewhat 2-cleft, the lower 3-denticulate; keel ciliate. *Agardh.—Hook. fl. Bor.-Am.* 1. *p.* 163; *Agardh! l. c. p.* 16.

Mountain vallies near Kettle Falls, and along the Oregon near the Rocky Mountains, *Douglas!* (v. sp. in *herb. Lindl.*)—Plant 6–8 inches high, silky-pubescent; the leaves nearly all from the base. Scape 1–2-leaved: spike densely flowered. Flowers purplish.

16. *L. lepidus* (Dougl.): stem few-leaved; leaflets 7–9, linear-lanceolate, silky on both sides; stipules setaceous-filiform; flowers somewhat scattered in a much elongated spike; bracts nearly equalling the calyx; calyx bracteolate, the upper lip somewhat 2-cleft, the lower entire; keel ciliate. *Agardh.—Dougl.! in bot. reg. t.* 1149; *Hook.! l. c.*; *Agardh! l. c. p.* 17.

Oregon from Fort Vancouver to the valleys of the Blue Mountains, *Douglas! Mr. Tolmie!*—Plant a foot or more in height, very silky. Spike very many-flowered; the upper flowers somewhat verticellate. Calyx hirsute. Corolla violet.

17. *L. polyphyllus* (Lindl.): tall; stem smoothish, mostly striate; leaflets 13–15, lanceolate, nearly glabrous above, silky-pubescent beneath; stipules triangular-subulate; flowers in a very long raceme, scattered; bracts shorter than the pedicels, very caducous; calyx ebracteolate, silky, the lips nearly entire; keel glabrous; legumes densely hairy.—*Lindl.! bot. reg. t.* 1097, & (β. albiflorus) *t.* 1377; *Hook.! fl. Bor.-Am.* 1. *p.* 164; *Agardh! l. c. p.* 17.

β. *grandifolius:* leaflets 9–11; stipules broader; flowers somewhat verticillate, in a more dense raceme; calyx more pubescent.—L. grandifolius, *Lindl.! in Agardh! l. c. p.* 18. L. polyphyllus, *Hook. & Arn. bot. Beechey, p.* 138? excl. syn. L. macrophyllus, *Benth. mss.*; *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 356.

In rich often overflowed plains near the mouth of the Oregon and at Puget Sound; common, *Douglas! Dr. Scouler! Nuttall!* β. California, *Douglas!*—A tall showy plant (3–5 feet high), with racemes of blue or purple, sometimes white flowers a foot or more in length; now common in gardens. Flowers large, on rather long pedicels; the upper ones somewhat verticillate. The L. grandifolius, *Lindl.* is said to retain its characters in cultivation.

18. *L. latifolius* (Agardh): tall; stem very smooth and shining, glabrous; leaflets 5–7, obovate, narrowed at the base, glabrous above, and nearly so beneath; stipules setaceous; bracts longer than the flowers, setaceous; raceme on an elongated peduncle, long, the flowers scattered; calyx ebracteolate, silky, the lips nearly entire; keel glabrous. *Agardh! l. c. p.* 18; *Lindl. bot. reg. t.* 1891.

California, *Douglas!*—Stem not striate, stout. Pedicels the length of the flowers. Flowers purplish-violet.

19. *L. cytisoides* (Agardh): tall; stem striate, a little scabrous, branching; leaflets 7–9, obovate-lanceolate, glabrous above, pubescent beneath; stipules setaceous; flowers in a long loose long-pedunculate raceme, scattered; bracts setaceous, scarcely longer than the pedicels; calyx ebracteolate, pubescent, the lips nearly entire; keel glabrous. *Agardh! l. c. p.* 18.

California, *Douglas!*—Pedicels longer than the flowers. Bracts not very caducous. Flowers yellow?

20. *L. parviflorus* (Nutt.! mss.): tall, erect, branching; somewhat hirsute-pubescent, or at length glabrous; leaflets 5–9, oblong-obovate, obtuse or sometimes acute, longer than the petiole; stipules minute, setaceous, somewhat persistent; racemes elongated; flowers (small) somewhat scattered; bracts subulate, about the length of the pedicels, caducous; calyx silky-pubescent, minutely bracteolate; the lips nearly equal, the upper one 2-toothed, the lower entire; keel ciliate; legume hirsute, 2–3-seeded.—*Hook. & Arn.! bot. Beechey, suppl. p.* 336.

"Plains of the Rocky Mountains towards the Oregon, *Nuttall!* Between Henry and Smith's Rivers, Snake Country, *Mr. Tolmie!*—"A very distinct large and branching species, with long, rather crowded racemes of small pale blue flowers, and large smooth leaves; the leaflets often 1½ inch in length and half an inch wide, broader upwards. Pedicels rather shorter than the flowers: keel small." *Nuttall.*

† † **Stems somewhat decumbent, loose, leafy, herbaceous, but somewhat persistent; stipules mostly large; racemes thick and dense: flowers large: calyx mostly bracteolate; the lips more or less cleft.** ***Agardh.***

21. *L. Nootkatensis* (Donn): stem herbaceous, villous with long spreading hairs; leaflets obovate-oblong, glabrous above, shorter than the petiole;

stipules somewhat lanceolate, nearly as long as the leaflets; bracts longer than the unexpanded somewhat verticillate flowers; calyx minutely bracteolate, the upper lip somewhat 2-cleft; keel glabrous.—*Donn, cat. Cantab.; Pursh! fl.* 2. *p.* 467; *Bot. mag. t.* 1311, & 2136; *DC. prodr.* 2. *p.* 408; *Hook. fl. Bor.-Am.* 1. *p.* 163; *Agardh! l. c. p.* 21. L. Nutkanus, *Spreng. syst.* 3. *p.* 227. L. regius, *Rudolph!* (ex spec. in *herb. Lamb.*)

β. glaber (Hook. l. c.): nearly glabrous.

North West Coast, *Menzies! Douglas!* Unalaschka, *Rudolph! Pallas!* (*Pursh!*) *β.* Rocky Mountains in lat. 55°, *Drummond*, ex *Hook.*—Flowers very large, in a loose raceme. Corolla blue, variegated with red and yellow veins.

22. *L. affinis* (Agardh): stem herbaceous, clothed with scattered spreading hairs; leaflets 7, obovate, attenuate at the base, pubescent on both sides, shorter than the petiole; stipules setaceous, about half as long as the leaflets; bracts equalling the unexpanded verticillate flowers; calyx bracteolate, the upper lip deeply 2-cleft; keel ciliate. *Agardh! l. c. p.* 20. (excl. syn. ?)

California, *Douglas!* (v. sp. in *herb. Lindl.*)—Differs from L. Nootkatensis, according to Agardh, in the much shorter and more sparse pubescence, the leaflets pubescent on both surfaces, the shorter and more obtuse bracts, smaller (blue) and more regularly whorled flowers, more evidently bracteolate calyx, with the upper lip almost 2-parted, &c.

23. *L. versicolor* (Lindl.): stem ligneous at the base, decumbent, silky; leaflets 9, obovate-linear, silky, the margins canescent, shorter than the petiole; stipules setaceous, hairy; flowers verticillate; calyx somewhat bracteolate, the upper lip emarginate; keel ciliate; legumes villous. *Lindl.! bot. reg. t.* 1979.

California, *Douglas*, (v. sp. cult.)—Stem about 2 feet high, much branched. Flowers variable in color, between rose-color, violet, pale blue, greenish white, and pink on the same raceme. *Lindl.*—Allied to L. rivularis.

† † † Stems procumbent, persistent: calyx ebracteolate, very deeply bilabiate: keel ciliate. ***Agardh.***

24. *L. rivularis* (Lindl.): stems a little shrubby, decumbent, sericeous; leaflets 7–9, narrowly obovate and elongated, slightly emarginate, as long as the petiole; stipules somewhat falcate; raceme elongated, loosely flowered; the flowers mostly verticillate, bluish lilac-color; calyx very deeply bilabiate, ebracteolate, the lips almost entire. *Agardh.*—*Lindl.! bot. reg. t.* 1595; *Agardh! l. c. p.* 24. L. labiatus, *Nutt.! mss.*

California, *Douglas! Nuttall!*—Stems leafy, 2–4 feet in length, when young (as also the leaves and calyx) minutely silky and shining. Leaflets narrowly obovate-spatulate, obtuse, mucronulate. Bracts very caducous. Pedicels rather shorter than the calyx. Flowers very large. Legume many-seeded.—Except in the color of the flowers, this species is scarcely to be distinguished from L. arboreus, which Mr. Nuttall suspects may have had a Californian origin. This is perhaps the L. arboreus *β.* odoratissimus of Fischer & Meyer (*ind. sem. St. Petersb.* 1835). which they state to be the L. sericeus of Eschscholtz (*in mem. acad. St. Petersb.* 10. *p.* 589); while the L. sericeus, *Hook. & Arn.*, *bot. Beechey*, is, as they conceive, L. Chamissonis, *Esch.*

* * *Legumes 4–5-seeded: seeds roundish, the hilum somewhat oblique: stems mostly persistent and silky.*

25. *L. perennis* (Linn.): stem herbaceous, minutely pubescent; leaflets

7–9, obovate-oblong, obtuse, somewhat mucronate, glabrous above, slightly pubescent beneath; stipules setaceous, minute, deciduous; flowers somewhat scattered, in a long loose raceme; bracts shorter than the pedicels, subulate, caducous; calyx often bracteolate; the upper lip gibbous at the base, emarginate, the lower nearly entire; keel ciliate.—*Linn.! spec.* 2. *p.* 721; *Michx.! fl.* 2. *p.* 55; *Bot. mag. t.* 202; *Pursh! fl.* 2. *p.* 467; *Bart. fl. N. Amer.* 2. *t.* 38; *DC. prodr.* 2. *p.* 408; *Richards. appx. Frankl. journ. ed.* 2. *p.* 27; *Hook. fl. Bor.-Am.* 1. *p.* 163; *Darlingt. fl. Cest. p.* 431.

β. stem and petioles clothed with long spreading hairs.

γ. smaller and more slender, hairy; lower stipules long and setaceous, somewhat persistent.—L. gracilis, *Nutt.! in jour. acad. Philad.* 7. *p.* 115, not of *Agardh.*

Woodlands in light or sandy soil, Canada! to the Southern States! common. Also at Cape Mulgrave, Behring's Straits (*Beechey*) and Shores of the Arctic Sea, *Richardson*, according to Hooker. β. Fort Gratiot, Michigan, *Dr. Pitcher!* γ. South Carolina! Georgia! and Alabama! June.—Stem erect, rather stout, striate, 1–2 feet high. Leaflets attenuate at the base. Peduncle naked: raceme 4–10 inches long. Flowers large, showy, purplish-blue. Bracteoles of the calyx very minute and caducous, or often wanting. Legume very hirsute with appressed hairs. Seeds variegated.—Mr. Oakes finds a white-flowered variety, and the same is mentioned by Mr. Curtis in his Catalogue. We have never seen the plant of Dr. Richardson: if it truly belong to this species, it forms the only instance within our knowledge of a phenogamous plant indigenous to the shores of the Gulf of Mexico and of the Arctic Sea! The lower stipules of this species are frequently rather persistent and wholly similar to those of L. gracilis, *Nutt.*, of which we have also more glabrous forms.—*Common Wild Lupine.*

26. *L. laxiflorus* (Dougl.): stem somewhat persistent, minutely silky-puberulent, leafy; leaflets 7–9 (rarely 11), linear-oblong, narrowed at the base, rather obtuse and mucronate at the apex, silky-pubescent on both sides; stipules subulate-setaceous, caducous; flowers scattered or a little verticillate in a loose elongated raceme; bracts about the length of the pedicels, caducous; calyx minutely bracteolate; the upper lip saccate or slightly spurred at the base, minutely 2-toothed at the apex (entire, *Agardh*), the lower entire; keel naked or slightly ciliate; legumes silky; 2–5 seeded.—*Dougl.! in bot. reg. t.* 1140; *Hook.! fl. Bor.-Am.* 1. *p.* 164; *Agardh! l. c. p.* 27.

β. *foliosus:* very leafy; flowers a little smaller; the calyx less saccate at the base; leaflets sometimes glabrous above.—L. foliosus, *Nutt.! mss.* L. arbustus, *Dougl. in bot. reg. t.* 1230; *Hook. l. c.*

γ. *tenellus:* stem slender, minutely puberulent; leaflets 5–7, linear; raceme slender; calyx gibbous or saccate at the base.—L. tenellus, *Dougl.! mss. in herb. Lindl.*; *Agardh! l. c.* L. laxiflorus β. *Hook. l. c.* L. foliosus β. stenophyllus, *Nutt.! mss.*

Oregon, from Fort Vancouver to the Rocky Mountains, *Douglas! Dr. Scouler! Nuttall!*—Plant 1–2 feet high. Leaflets about 1½ in length (those of the upper leaves as long as the petioles), canaliculate, arcuate. Flowers pale blue, smaller than in L. perennis.

27. *L. argenteus* (Pursh): silvery-sericeous; leaflets 7–9, obovate-lanceolate, silky beneath, green and smoothish above, shorter than the petiole; stipules subulate; flowers irregularly verticillate in a loose conical raceme; bracts filiform, twice the length of the corolla, caducous, very silvery, as well as the bracteolate calyx; vexillum glabrous. *Agardh! l. c.*—L. argenteus, *Pursh?*

Banks of the Kooskoosky River, *Lewis*. Flowers cream-colored, *Pursh.*—"Stem ascending, obsoletely striate. Bracts long, silvery, somewhat comose. Flowers as large as in L. hirsutus. Upper lip of the calyx cleft at the apex; the lower entire, scarcely longer." *Agardh.*—The description of Agardh is drawn from a specimen cultivated in the garden of the London Horticultural Society. Not having compared the two, we are uncertain whether it be the same with the fragment of L. argenteus preserved in Mr. Lambert's herbarium; nor are we well satisfied that the succeeding species is distinct from it.

28. *L. ornatus* (Dougl.): tall, silvery-sericeous; leaflets 7–11, obovate-linear, silky on both sides, half the length of the petiole; stipules subulate; flowers verticillate in an elongated raceme, the whorls distant; bracts lanceolate, acuminate, scarcely longer than the pedicels, caducous; calyx bracteolate; vexillum silky-pubescent. *Agardh.—Dougl.! in bot. reg. t.* 1216; *Brit. fl. gard. ser.* 2. *t.* 212; *Agardh! l. c. p.* 28.

Near the source of the Oregon; also at Kettle Falls, and in the vallies of the Spokan River, *Douglas!* (v. sp. in *herb. Lindl.*)—Stem 1–3 feet high. Leaflets clothed with a close appressed hirsute silvery pubescence. Upper lip of the calyx cleft at the apex; the lower a little longer, obtuse, nearly entire. Corolla blue, as large as in L. perennis, twice the length of the calyx. —We doubt if the succeeding species be sufficiently distinct from this, in which the leaflets are sometimes about the length of the petiole.

29. *L. leucopsis* (Agardh): silky-tomentose with whitish hairs; leaflets 7–9, lanceolate, as long as the petiole; stipules subulate, short; flowers somewhat verticillate in a rather dense raceme; bracts very caducous; calyx bracteolate; vexillum silky-pubescent on the outside; legumes tomentose.—*Agardh! l. c. p.* 29.

Oregon, *Douglas!* (v. sp. in *herb. Lindl.*)—Stem tall, branching, whitish with a very dense tomentum. Upper lip of the calyx 2-toothed; the lower entire, about the length of the upper. Corolla blue, larger than in L. perennis. Legume 4-seeded. *Agardh.*

30. *L. albicaulis* (Dougl.): tall, puberulent; stem somewhat persistent; leaflets 7–9, oblanceolate, mucronate, minutely silky-puberulent on both sides; about the length of the petiole; stipules minute, caducous; flowers somewhat verticillate or scattered, in a long dense raceme; bracts subulate, deciduous, about the length of the downy pedicels; calyx silky; the lips elongated, nearly equal, the upper 2-cleft at the tip; keel elongated, falcate, glabrous.—*Hook.! fl. Bor.-Am.* 1. *p.* 165; *Agardh! l. c. p.* 29. L. falcifer, *Nutt.! mss.*

Oregon, about Fort Vancouver, common, *Douglas! Nuttall!*—A large showy species, with a long raceme of purple flowers, well distinguished by its long curved keel. Mr. Nuttall's specimens wholly agree with those of Douglas; but the bracts are by no means persistent, as described by Agardh, &c.

31. *L. Sabinii* (Dougl.): stem tall, striate, nearly glabrous; leaflets 8–11, lanceolate, silky on both sides with fulvous hairs, rather longer than the petiole; stipules long and setaceous; flowers somewhat verticillate in a dense thick raceme; bracts subulate, equalling the ebracteolate calyx; keel ciliate. *Agardh.—Hook. fl. Bor.-Am.* 1. *p.* 166. L. Sabinianus, *Agardh! l. c. p.* 30.

On the Blue Mountains, Oregon; and on the dividing ridge of the Rocky Mountains, near the confines of perpetual snow, *Douglas!* (v. sp. in *herb. Lindl.*)—Suffruticose? Pedicels long. Calyx villous with yellow silky hairs; the upper lip gibbous at the base, 2-toothed at the apex. Corolla yellow. Legumes very silky-villous.—This is said to be a very beautiful species.

32. *L. sulphureus** (Dougl.): stem erect, sulcate, silky; leaflets 13–15,

narrowly lanceolate, densely sericeous on both sides, shorter than the petiole; stipules subulate, short; flowers somewhat verticillate in a dense thick raceme; calyx ebracteolate; keel glabrous. *Agardh.—Hook. fl. Bor.-Am.* 1. *p.* 166; *Agardh! l. c.*

On the Blue Mountains of Oregon, and near the source of Clarke's River, *Douglas!* (v. sp. in *herb. Lindl.*)—This is said to resemble the foregoing, but is a much slenderer and smaller plant, the leaflets (whitish) narrower and more numerous, the flowers smaller and of a pale sulphur-color. Calyx very silky.

33. *L. sericeus* (Pursh): silky-villous; leaflets 7–9, lanceolate, narrowed at the base, rather longer than the petiole; stipules minute, setaceous; flowers somewhat verticillate in an elongated raceme; bracts about the length of the flower-buds; calyx bracteolate; corolla glabrous. *Agardh.—Pursh. fl.* 2. *p.* 468; *DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 164; *Agardh! l. c. p.* 31; *Nutt.! in jour. acad. Philad.* 7. *p.* 17; *Hook. & Arn. bot. Beechey, p.* 138? L. Chamissonis, *Esch. in mem. acad. St. Petersb. l. c.* & *in Linnæa,* 3. *p.* 151?

Banks of the Kooskoosky River, *Lewis.* Oregon? *Douglas!* On the Flat-Head River and in the Rocky Mountains, *Nuttall!* Also in California? —Corolla rose-color or pale purple, according to Pursh; blue, according to Nuttall.—Fischer and Meyer remark that the L. sericeus of Eschscholtz is the same with their L. arboreus β. odoratissimus, which is probably L. rivularis; while they refer the L. sericeus of Hooker and Arnott to L. Chamissonis, *Esch.* We have not the means of ascertaining by comparison whether the Californian species has been correctly referred to L. sericeus of Pursh.

34. *L. cæspitosus* (Nutt.! mss.): "dwarf, nearly stemless, silky-hirsute; leaflets 5–7, oblong-lanceolate, attenuate at the base, much shorter than the petiole; spike sessile, densely-flowered, much shorter than the leaves; bracts setaceous, deciduous; calyx bracteolate, the upper lip 2-parted, the lower obscurely 3-toothed; legume villous, 3–4-seeded.

"In the grassy vallies of the Rocky Mountains, on the Sweet Water of the Platte and the Colorado of the West.—Plant 3–4 inches high, forming small cæspitose tufts. Stipules adnate, subulate. Flowers small, nearly sessile, pale blue. *Nuttall.*"—Allied to L. aridus, *Dougl.*, but the flowers are smaller, the keel naked, &c. It also resembles L. pusillus.

35. *L. aridus* (Dougl.): very silky-hirsute with fulvous hairs; stem low, much branched from the base; leaflets 7, oblong-lanceolate, about one-third the length of the petiole; flowers in a conical very dense spike; bracts subulate, rather persistent, shorter than the bracteolate calyx; vexillum glabrous; keel lanuginous-ciliate; legumes villous. *Agardh.—Dougl.! in bot. reg. t.* 1242; *Hook. l. c.; Agardh! l. c. p.* 31.

Dry sandy deserts of the Oregon, from the Great Falls to the sources of the Missouri, *Douglas!* (v. sp. in *herb. Lindl.*)—Stem scarcely a foot high. Stipules subulate. Flowers irregularly verticillate, on short pedicels, rose-color. Upper lip of the calyx 2-cleft, the lower entire. Corolla about one-third longer than the calyx. *Agardh.*

36. *L. leucophyllus* (Lindl.): densely villous with a fulvous silky tomentum; stem elongated; leaflets 7–9, linear-lanceolate or lanceolate-oblong, acuminate, shorter than the petiole; flowers crowded in an elongated very dense subsessile spike; bracts somewhat persistent, shorter than the expanded subsessile flowers; calyx bracteolate; vexillum silky-pubescent externally; legumes densely villous, 4–5-seeded.—*Lindl.! bot. reg. t.* 1124; *Hook. l. c.; Agardh! l. c. p.* 31. L. densiflorus, *Nutt. mss.* (ex descr.) not of *Benth.*

Sandy deserts, from the Great Falls of the Oregon to the sources of the Missouri, *Douglas! Mr. Wyeth.*—A very fine stout species, every part (save the petals) clothed with compact very soft fulvous hairs; the leaflets 2 inches or more in length. Stipules subulate, longer than the bracts. Spike the most dense of all the species, cylindrical, subsessile; the flowers subsessile, somewhat alternate. Upper lip of the calyx 2-cleft; the lower entire, very obtuse. Corolla white, tinged with pink, rather longer than the calyx.—This species, Dr. Lindley remarks, should rank next to L. alopecuroides, a native of the Andes.

37. *L. plumosus* (Dougl.): densely villous with a silvery silky tomentum; stem elongated; leaflets [5–7] lanceolate, rather longer than the petiole; flowers in an elongated dense spike; bracts subulate-filiform, twice as long as the flowers, caducous; calyx bracteolate; vexillum silky-pubescent externally; legumes glabrous. *Agardh.—Dougl.! in bot. reg. t.* 1217; *Hook. l. c.; Agardh! l. c. p.* 32.

"In North California, lat. 45°, growing in gravelly soil, at the source of the Wallawallah River, near the Blue Mountains." *Douglas!* (v. sp. in *herb. Lindl.* & cult.)—Differs from the preceding in the more silvery downy covering of the stem and leaves, the larger flowers in a much less crowded spike, and in the much longer shaggy bracts, which give the unexpanded portion of the raceme a comose appearance, &c. The leaflets are sometimes as few as 3. Flowers white or rose-color.—In the dried specimens this species seems quite distinct from L. leucophyllus, under which name it is, we suspect, sometimes cultivated, as our specimens from the garden of the London Horticultural Society are thus labelled. Indeed this name is more applicable to this than to the former species, in which the down of the leaves, as well as of the stem &c., is usually fulvous.

* * * *Shrubby: stems decumbent or ascending, ligneous.*

38. *L. albifrons* (Benth.): shrubby, decumbent, very densely silvery-sericeous; leaflets 7–9, obovate-cuneiform, shorter than the petiole; stipules subulate; flowers verticillate, with the whorls rather distant; bracts lanceolate, acuminate; calyx bracteolate; the upper lip 2-cleft; the lower entire; corolla nearly glabrous. *Agardh.—Benth.! in hort. trans.* ~~[illegible]~~. *p.* 410; *Lindl.! bot. reg. t.* 1642; *Agardh! l. c. p.* 33.

California, *Douglas! Nuttall!*—Stems 8–12 inches long, very leafy below. Leaflets obtuse, mucronulate. Peduncle elongated. Lips of the calyx nearly equal. Corolla rather large, blue: keel ciliate. Legumes silky, 4–5-seeded.

39. *L. holosericeus* (Nutt.! mss.): frutescent? "silvery-canescent, low, decumbent; leaflets 5–9, lanceolate, acute, narrowed at the base, arcuate, densely silky-canescent and silvery on both sides, mostly shorter than the petiole; stipules subulate; flowers verticillate or somewhat scattered, approximate, small, on short pedicels; bracts lanceolate, shorter than the flowers; calyx bracteolate; the upper lip slightly 2-cleft, the lower nearly the same length and entire; legumes silky, 3–4-seeded."

Islands and gravelly banks of the Wahlamet, *Nuttall!*—Stem 6–8 inches high, leafy, branching. Leaflets of the upper leaves as long as the petiole. Flowers about half the size of those of *L. albifrons*, bright blue. Very nearly allied to the preceding species, but with a marked difference in the leaflets and size of the flowers: it does not agree with the more elongated variety of that species with smaller flowers, mentioned by Agardh; and it is still more different from L. Douglasii.

40. *L. Douglasii* (Agardh): shrubby, densely silky and fulvous; leaflets

oblong-lanceolate, silky on both sides, attenuate at both ends, shorter than the petiole; stipules long, setaceous; flowers irregularly verticillate; bracts subulate-filiform, longer than the flowers, caducous; calyx bracteolate; the upper lip almost 2-parted, the lower 3-toothed; corolla nearly glabrous. *Agardh! l. c. p.* 34.

California, *Douglas!* (v. sp. in *herb. Lindl.*)—The locality is omitted by Agardh.

41. *L. flexuosus* (Lindl.): shrubby, ascending, silvery and silky; stem very flexuous; leaflets obovate-oblong, silky on both sides, shorter than the petiole; stipules setaceous, minute; flowers in distant somewhat regular whorls; bracts lanceolate, acuminate, longer than the flower buds, caducous; calyx bracteolate; the upper lip somewhat 2-cleft, the lower entire; vexillum slightly sericeous. *Agardh! l. c. p.* 34.

Oregon, *Douglas!* (v. sp. in *herb. Lindl.*)—Flowers smaller than in L. perennis, blue: keel ciliate.

42. *L. littoralis* (Dougl.): shrubby, decumbent, silvery-sericeous; stem filiform; leaflets elongated-obovate, silky on both sides, shorter than the petiole; flowers somewhat scattered; calyx ebracteolate, both lips nearly entire; corolla glabrous; legumes 10–12-seeded. *Agardh.—Dougl.! in bot. reg. t.* 1198; *Hook. bot. mag. t.* 2952, *& fl. Bor.-Am.* 1. *p.* 164; *Agardh! l. c. p.* 36.

Rocky shores of Oregon from Cape Mendocino to Puget Sound, *Douglas!* (v. sp. in *herb. Lindl.*)—Flowers pedicellate, purple; the vexillum yellow in the middle, with purple spots. Legumes nearly 1½ inch long.—The granulated roots are farinaceous, and are used by the Chenook Indians as an article of food, under the name of "Somuchtan." *Dougl.*

43. *L. macrocarpus* (Hook. & Arn.): suffruticose, leafy; leaves on short petioles; leaflets about 7, lanceolate, very obtuse, attenuate at the base, glabrous above, silky with appressed hairs beneath; raceme many-flowered; flowers (very large) rarely verticillate; calyx, pedicels, and rachis silky; legumes linear-oblong, tumid, hirsute, 8–10-seeded. *Hook. & Arn. bot. Beechey, p.* 138.

St. Francisco, California, *Menzies.*—"This does not correspond with any described species, nor with any found by Mr. Douglas. The lower part of the stem is decidedly shrubby, the leaves and legumes large in proportion to the size of the plant, [and the flowers] apparently yellow when recent. Perhaps, in habit, its nearest affinity is with L. littoralis, *Dougl.*; but the leaves are, in that plant, silky on both sides, the flowers differently colored, and the legumes not half the size." *Hook. & Arn.*

44. *L. decumbens* (Torr.): suffruticose, rather decumbent, minutely silky-pubescent; leaflets about 7, oblong-lanceolate, glabrous above, somewhat silky beneath, about the length of the petiole; stipules subulate-setaceous, minute; racemes few-flowered; the flowers scattered or somewhat verticillate, on short pedicels; calyx bracteolate; the lips a little unequal, entire; legumes silky, 3–4-seeded.—*Torr.! in ann. lyc. New York,* 2. *p.* 191.

On the southern branches of the Arkansas, *Dr. James!*—Stems cæspitose. Flowers smaller than in L. perennis, purple. Legumes about an inch long.

§ 3. *Perennial: leaves unifoliolate: legumes plane.*

45. *L. villosus* (Willd.): densely silky-tomentose; stem decumbent and somewhat ligneous at the base; leaves large, lanceolate-oblong, on long woolly petioles; stipules linear-subulate, very long; flowers somewhat alter-

nately disposed in a very long dense spike; bracts nearly as long as the calyx, deciduous; calyx bracteolate, the upper lip 2-cleft, the lower denticulate or entire; legumes oblong, flattish, very densely woolly, 4–5-seeded.—*Willd.! spec.* 3. *p.* 1029; *Pursh! fl.* 2. *p.* 468, *t.* 21; *Nutt.! gen.* 2. *p.* 93; *Ell.! sk.* 2. *p.* 191; *DC.! prodr.* 2. *p.* 410; *Agardh! l. c. p.* 41. L. pilosus, *Walt.! Car. p.* 180; *Michx.! fl.* 2. *p.* 56, not of *Linn.* L. integrifolius, *Desrouss. in Lam. dict.* not of *Linn.*

β. diffusus: stems more decumbent and diffuse; leaves shorter, oval, or somewhat oblong-obovate, and, with the petioles and stems, densely sericeous but scarcely tomentose; bracts (especially the uppermost) much shorter than the calyx.—L. diffusus, *Nutt.! gen. l. c. & mss.*; *Ell. l. c.*

In sandy barrens, N. Carolina! to Florida! common. March–April.—Stems leafy towards the base, short. Leaflet (articulated with the petiole) 3–5 inches long (in *β.* 2–3 inches) obtuse or a little attenuate at the base, about the length of the petioles, and, with the stipules and stems, very densely silky-villous when young; when old, losing a portion of the long hairs. Stipules adnate at the base; the free portion often an inch or more in length. Flowers large, on very short pedicels, in a crowded pedunculate spike 6–12 inches in length. Lips of the very silky calyx rather shorter than the corolla. Legume an inch or more in length, very thickly clothed with long woolly hairs, tipped with the persistent style. Seeds small, roundish, mottled.—Although Mr. Nuttall, who has had the opportunity of examining the two plants in a living state, still considers his L. diffusus a distinct species, yet our numerous specimens exhibit a manifest gradation from the L. diffusus, *Nutt.* to the largest and most lanuginous states of L. villosus. The corolla is stated by Nuttall to be "reddish purple, and variegated, with a dark spot or cloud in the centre of the vexillum" in L. villosus; and "blue with a paler greenish spot on the vexillum" in L. diffusus. The bracts in the former are subulate-filiform from a broad base, very woolly, and rather longer than the flower-buds; in the latter the lowermost are nearly similar, but those at the summit of the spike are much shorter and only mucronate.

TRIBE VIII. SOPHOREÆ. *DC.*

Sophoreæ & Podalyrieæ, *Benth.*

Corolla papilionaceous. Stamens 10, distinct: anthers uniform. Legume continuous, or frequently moniliform, but not jointed. Embryo incurved or inflexed, or often straight.—Leaves unequally pinnate, palmate, or simple, not stipellate.

Mr. Bentham has established the Tribe Podalyrieæ, to include those Sophoreæ of De Candolle that have simple or palmately compound leaves, the radicle incurved or inflexed, and the legumes dehiscent; restricting the former tribe to those with unequally pinnate leaves, mostly straight embryo, and indehiscent legumes. The distinction is doubtless just; but, since of our three genera of true Sophoreæ, the first two (viz: Sophora and Cladrastis) have the radicle curved or bent, the second and third (Cladrastis and Cercis) have dehiscent legumes, and the latter has simple leaves, we think it better not to make the division in the present work. The true Sophoreæ are mostly trees or shrubs, and the Podalyrieæ almost wholly herbaceous plants.

1. ***Leaves palmately 3-foliololate or simple: radicle incurved or inflexed: mostly herbs.*** **(Podalyrieæ, *Benth.*)**

48. BAPTISIA. *Vent. gen. nov. p.* 9; *R. Br. in hort. Kew.* (*ed.* 2.) 3. *p.* 6; *Ell. sk.* 1. *p.* 467; *Benth. comm. Leg. gen. p.* 2.

Calyx campanulate, 4–5-cleft at the summit, somewhat bilabiate, persistent. Vexillum rather shorter than the wings or about the same length, orbicular, emarginate, the sides reflexed: wings oblong: keel slightly incurved, nearly as long as the wings; the petals somewhat united. Stamens deciduous. Ovary stipitate: ovules numerous: style slightly incurved, attenuate-subulate: stigma minute. Legume by abortion mostly few-seeded, stipitate, inflated.—Perennial herbs (all North American), with simple or palmately 3-foliolate leaves. Stipules distinct, often small or caducous. Flowers large, in terminal racemes (often opposite the leaves), or sometimes axillary and solitary: pedicels (except in a single species) ebracteolate.

§ 1. *Leaves simple.*

1. *B. perfoliata* (R. Brown): very glabrous; leaves orbicular or somewhat oval, perfoliate, glaucous; flowers axillary, solitary (pale yellow); legumes large inflated.—*R. Br. in hort. Kew.* 3. *p.* 5; *Ell. sk.* 1. *p.* 467; *DC.! prodr.* 2. *p.* 100; *Hook. bot. mag. t.* 3121. Crotalaria perfoliata, *Linn. spec.* 2. *p.* 714. C. perfoliatæ folio, &c. *Dill. Elth. f.* 122. Sophora perfoliata, *Walt.! Car. p.* 135. Rafnia perfoliata, *Willd. spec.* 3. *p.* 949. Podalyria perfoliata, *Michx.! fl.* 1. *p.* 263; *Pursh! fl.* 1. *p.* 207.

Dry sandy soil, S. Carolina! and Georgia! May–July.—Stem sparingly branched. Flowers small. Seeds very small.—A singular species. The perfoliate leaves would seem to consist of the leaf and stipules coalescent into a single body.

2. *B. microphylla* (Nutt.): leaves simple, sessile, roundish-cuneiform; the upper ones somewhat clasping; stipules roundish; flowers axillary, solitary; legumes short, subglobose. *Nutt. in jour. acad. Philad.* 7. *p.* 97.

West Florida and the contiguous parts of Alabama.—Much branched. Leaves scarcely an inch in length, and of about the same width, cuneate at the base, where they are approached by the round leafy stipules. Near the summit of the stem, one of the stipules, and sometimes both, coalesce in the leaf, and thus present an amplexicaule base to the foliage. Peduncles short. Legumes conspicuously stipitate. *Nuttall.*—The flowers are unknown, and the plant is described from the winter vestiges.

3. *B. simplicifolia* (Croom): glabrous; leaves sessile, broadly oval or ovate, obtuse, shining above, somewhat glaucous beneath; stipules none; racemes elongated; bracts ovate, about the length of the pedicels, persistent (flowers yellow); legumes small, ovate.—*Croom! in Sill. jour.* 25. *p.* 74 (1833); *Nutt.! in jour. acad. Philad.* 7. *p.* 96.

Quincy, Middle Florida, *Mr. Croom! Dr. Chapman!* June–Sept.—Plant 2–3 feet high, turning black in drying. Stem angled, striate, branched above. Leaves somewhat coriaceous, 3–4 inches long and 2–3 wide. Racemes 4–6 inches long; the flowers rather crowded, a little larger than those of B. tinctoria. Pedicels shorter than the flowers. Calyx 4-cleft; the upper segment 2-toothed. Ovary minutely canescent. Legumes about half an inch long: stipe scarcely exserted.

§ 2. *Leaves palmately 3-foliolate.*

4. *B. lanceolata* (Ell.): minutely pubescent or nearly glabrous; stem

much branched, flexuous; leaves nearly sessile; leaflets oblanceolate or cuneiform-spatulate, somewhat petiolulate, very obtuse, reticulated; glabrous above, puberulent beneath; stipules very minute, caducous; flowers (obscure yellow) axillary, solitary, on short pedicels; legumes ovate-globose, large and thick.—*Ell. sk.* 1. *p.* 467; *DC.! prodr.* 2. *p.* 100. B. uniflora, *Nutt.! l. c.* Sophora lanceolata, *Walt.! Car. p.* 135. Podalyria uniflora, *Michx.! fl.* 1. *p.* 263.

β. large, nearly glabrous; leaflets oval-oblong, tapering at each end, particularly at the base, rather obtuse; the terminal flowers two or three together.

γ. more pubescent; leaflets cuneiform-obovate, often retuse; the lower flowers axillary; the others usually forming short racemes at the extremity of the branches; bracts of the upper flowers subulate, as long as the pedicels. —B. uniflora, *Hook.! compan. to bot. mag.* 1. *p.* 21.

In dry sandy soil, S. Carolina! to Florida! *β.* Middle Florida, *Dr. Chapman! γ.* Louisiana, *Drummond! Dr. Hale!* Arkansas, *Nuttall!*—April–June.—Plant 2–3 feet high, the minute pubescence appressed. Leaves coriaceous. Flowers large. Teeth of the calyx short, triangular, acute; the upper one larger, obtuse or emarginate: in *β.* all rather obtuse. Ovary very villous. Legumes large, at first silky-villous, ovate-lanceolate.

5. *B. villosa* (Ell.): pubescent, villous when young; leaves almost sessile; leaflets lanceolate-oblong or somewhat obovate, at length glabrous and shining above; stipules linear or lanceolate, persistent, longer than the petioles; racemes elongated; bracts subulate, shorter than the erect pedicels, deciduous; (flowers grayish, *Walt.*); (legumes oblong, obtuse, somewhat cylindrical, *Nutt.*)—*Ell. sk.* 1. *p.* 468; *Nutt.! gen.* 1. *p.* 281; *DC. l. c.* Sophora villosa, *Walt. Car. p.* 134. Podalyria villosa, *Michx.! l. c.; Pursh, l. c.?*

North Carolina, *Michaux! Mr. Curtis!* Arkansas, *Nuttall!* June–July.—Plant rather large. Stem branched, pubescent with minute appressed hairs. Leaflets 2–3 inches long, obtuse, attenuate at the base and almost petiolate, villous-pubescent when young, especially beneath. Pedicels shorter than the flowers; which are about the size of those of B. lanceolata. Calyx somewhat villous-pubescent with appressed hairs; the teeth acute; the upper one slightly notched. Ovary very woolly.—We have drawn up our description from the specimen of Mr. Curtis, which we think is the same with the plant of Michaux. We are doubtful, however, whether it be the Sophora villosa of Walter, in whose herbarium a portion of a raceme of the plant only exists; and in this the calyx is more villous. Elliott seems to be unacquainted with the species, and this is probably also the case with Pursh. Mr. Nuttall's specimens from Arkansas agree well with the plant from North Carolina, except that the lowest bracts are ovate-lanceolate, foliaceous, as long as the pedicels, and persistent. We have never seen the fruit.

6. *B. sphærocarpa* (Nutt.): glabrous; leaves nearly sessile; leaflets obovate-oblong, obtuse, minutely pubescent when young; stipules and bracts minute or almost none; racemes spicate, elongated; pedicels shorter than the calyx (flowers deep yellow); legumes very short, subglobose.—*Nutt.! in jour. acad. Philad.* 7. *p.* 97.

Plains of the Arkansas (in rather wet gravelly soil), *Nuttall!* Near Fort Towson, *Dr. Leavenworth!* Around Little Rock, Arkansas, *Dr. Engelmann!*—Texas! June–July.—Stems 2–3 feet high, many from the same roots, with erect branches. Flowers large, usually in a long strict spike. Teeth of the calyx short, very acute; the upper one obtuse. Ovary glabrous. Stipe short.—The fruit, according to Dr. Engelmann, is rather oval than globose, and the walls remarkably hard and thick.

7. *B. leucophæa* (Nutt.): somewhat villous; branches divaricate; petioles very short or none; leaflets oblanceolate or oblong-obovate; stipules and bracts large and foliaceous, ovate, persistent; racemes elongated, many-flowered; flowers on very long drooping pedicels, secund, ochroleucous; legumes large, globose-ovoid, canescently puberulent.—*Nutt.! gen.* 1. *p.* 282; *DC. l. c.* B. bracteata, *Muhl. cat.* ex *Ell. sk.* 2. *p.* 468; *DC. l. c.*

Dry rich soils, Georgia! and Michigan! to Arkansas! Missouri! and Texas! April.—Plant 1–2 feet high, stout, when old often somewhat glabrous: branches horizontal. Leaflets 2–3 inches long. Stipules an inch or more in length, ovate, acuminate, very broad and somewhat clasping at the base. Bracts similar to the stipules, acute; the uppermost smaller, sometimes lanceolate. Racemes often a foot long, reclined. Pedicels 1–2 inches long. Flowers very large (an inch or more in length.) Calyx-segments 4, canescent within, ovate-lanceolate; the upper one broader, emarginate. Ovary silky-villous. Legumes an inch or more in length, pointed, inflated.

8. *B. australis* (R. Brown): glabrous; leaves on short petioles, the uppermost sometimes nearly sessile; leaflets obovate-oblong or oblong-cuneiform, obtuse; stipules lanceolate, equalling or exceeding the petioles, often persistent; racemes elongated, erect; bracts ovate-lanceolate, caducous; pedicels shorter than the calyx; flowers very large, indigo-blue; vexillum a little shorter than the wings, often slightly auriculate at the base; legumes large, oval-oblong; the stipe about the length of the calyx.—*R. Br. in hort. Kew. (ed. 2.)* 3. *p.* 6; *Ell. sk.* 1. *p.* 468; *DC.! l. c.* B. cærulea, *Nutt.! l. c.* Sophora australis, *Linn.! syst. veg.* (not of *mantiss.?*); *Bot. mag. t.* 509. S. cærulea, *Trew, pl. rar.* 6. *t.* 14, ex *R. Br.* S. alba, var. *Murr. in comm. Goett.* 1. *p.* 96, *t.* 6. Podalyria australis, *Willd.! spec.* 2. *p.* 503; *Vent.! hort. Cels. t.* 56. P. cærulea, *Michx.! fl.* 1. *p.* 264.

β. flowers smaller and fewer; vexillum not auriculate.—B. minor, *Lehm.! ind. sem. Hamb.* 1827.

γ. flowers chocolate-colored.

Borders of streams in rich soil, Pennsylvania! to Georgia, Louisiana! and Arkansas! *γ.* Arkansas, *Dr. Leavenworth!* June–Aug.—Stem erect, 2–3-feet high. Leaflets 2–3 inches in length: the stipules often rather large and conspicuous, foliaceous, and a portion of them persistent. Flowers often more than an inch in length. Teeth of the calyx broad and short; the uppermost very obtuse and entire. Legume about 2 inches long when mature.—The Sophora australis which Linnæus first had in view seems to have been a South African plant, but the name was afterwards applied to this species.

9. *B. leucantha:* glabrous and glaucous; leaves on short petioles, the uppermost often sessile; leaflets (thickish) cuneiform-obovate or obovate-oblong, obtuse; stipules lanceolate, about the length of the petioles, mostly caducous; racemes elongated, erect; bracts ovate-lanceolate, very caducous; pedicels about the length of the calyx; flowers large, white; vexillum much shorter than the wings; legumes large, oval-oblong, on a stipe fully twice the length of the calyx.—B. alba, *Bot. mag. t.* 1177; *Hook. fl. Bor.-Am.* 1. *p.* 100, not of *R. Br.?* and not Sophora alba, *Linn.*

In rich alluvial soil, Upper Canada (near Lake Erie), Michigan! Ohio! to Louisiana! and Arkansas! June–July.—Stem 2–3-feet high, branching; the branches erect—spreading, stout. Leaflets about 2 inches in length, thickish and firm, turning blackish in drying. Raceme erect, on a stout peduncle, 4–8 inches, or at length often a foot or more in length; the flowers rather crowded. Pedicels stout. Teeth of the calyx short and broad; the upper one emarginate. Petals white, the vexillum tinged with purple in the centre. Legume about 2 inches long; the stipe at length half an inch in length.—This species much resmbles B. australis in habit and mode of growth. We have never received it from the Southern Atlantic States.

10. *B. alba.* (R. Brown ?): glabrous; branches slender, flexuous and widely spreading; leaves on slender petioles; leaflets (membranaceous) elliptical-oblong, acute at the base; stipules and bracts subulate, minute, caducous; racemes elongated, slender, often nodding, on a long naked peduncle, pedicels filiform, longer than the calyx (flowers white); legumes obovate, slightly stipitate, much inflated.—*R. Br. l. c. ?* excl. syn. *Bot. mag.; Ell. sk.* 1. *p.* 468; *DC. prodr.* 2. *p.* 100. Crotalaria alba, *Linn. spec.* 2. *p.* 716. Sophora alba, *Linn. syst.; Reich. syst.* 2. *p.* 242; *Walt.! Car. p.* 135. Podalyria alba, *Willd. spec.* 2. *p.* 503; *Michx.! fl.* 1. *p.* 264; *Pursh, fl.* 1. *p.* 308.

In damp soil along streams, Virginia and N. Carolina! to Florida! March–April.—Stem simple, 1–2 feet high, branching towards the summit. Leaves scarcely turning blackish in drying: leaflets very pale and minutely puberulent beneath: petioles nearly half the length of the leaflets. Flowers smaller than in B. leucantha. Teeth of the calyx short and broad; the upper one slightly emarginate.—The stem according to Linnæus, and according to Elliott the peduncles and branches, are deep purple, which is hardly the case in dried specimens. Our B. leucantha was figured in the Botanical Magazine under the name of Podalyria alba, since which it has been more or less confounded with the present species; which alone has slender often nodding racemes, minute stipules, and leaves which may be compared with those of Laburnum.

11. *B. megacarpa* (Chapman! mss.): glabrous; branches slender; leaves petioled; leaflets oval, rather large, glaucous beneath; stipules and bracts subulate, minute, caducous; racemes short, on rather short peduncles; pedicels longer than the calyx; flowers (yellow) nodding; legumes large, at length subglobose, coriaceo-membranaceous, much inflated.

Rich soils, Gadsden County, Middle Florida, *Dr. Chapman!* May.—This species resembles B. alba; but has much larger and yellow flowers, as well as shorter and fewer-flowered racemes, and larger leaves, which, like that species, do not turn black in drying. We have not seen the ripe fruit of the preceding species: in the present the mature legumes are nearly globose and 1–1½ inch in diameter.—Dr. Engelmann informs us that, he has found either this same, or more probably an allied species, in the prairies near Fort Gibson, Arkansas.

12. *B. tinctoria* (R. Brown): glabrous, much branched; leaves nearly sessile; leaflets roundish-obovate or cuneiform; stipules and bracts minute, caducous; racemes short, few-flowered, terminating the branches; pedicels naked, shorter than the (yellow) flowers; legumes small, subglobose, glabrous, raised on a long stipe.—*R. Br. in hort. Kew.* 3 *p.* 6; *Ell. sk.* 1. *p.* 467; *DC.! prodr.* 2. *p.* 100; *Hook.! fl. Bor.-Am.* 1. *p.* 129; *Darlingt. fl. Cest. p.* 404. Sophora tinctoria, *Linn.! spec. l. c.; Walt.! Car. l. c.* Podalyria tinctoria, *Lam. ill. t.* 327; *Willd. l. c.; Michx.! fl.* 1. *p.* 265; *Pursh, fl.* 1. *p.* 308; *Bot. Mag. t.* 1099; *Bigel. fl. Bost. ed.* 2. *p.* 170.

Dry hills, Canada! to Florida! and west to the Mississippi. July–Sept.—Stem about 2 feet high, bushy. Leaflets ½–1 inch long, rounded and often emarginate at the apex. Flowers rather small. Valves of the legume boat-shaped.—It is said that this plant will yield a considerable quantity of inferior indigo; whence the common name, *Wild Indigo.*

13. *B. Lecontii:* minutely pubescent, much branched; leaves on short petioles, the uppermost nearly sessile; leaflets obovate-oblong; stipules minute, subulate, caducous; racemes pedunculate, 5–10-flowered; bracts

subulate, somewhat persistent; pedicels longer than the (yellow) flowers, bibracteolate; legumes oval, somewhat stipitate, scabrous.

β. racemes somewhat paniculate; bracts and bracteoles ovate-lanceolate, persistent.

Riceborough, Georgia, Mr. *L. LeConte!* Middle Florida, *Dr. Baldwin! Dr. Chapman!* May.—Plant with the habit of B. tinctoria; but with longer and narrower leaves, bracteolate pedicels, &c. The leaves do not turn black in drying, as in that species.

‡ *Species which have not fallen under our observation.*

14. *B. mollis* (Michx. under Podalyria): stem, leaves, and calyx minutely pubescent; stipules foliaceous, lanceolate; leaflets somewhat rhombic-lanceolate; spike terminal; flowers yellow; teeth of the calyx acute. *Michx. fl.* 1. *p.* 264.

In Mecklenburg County, N. Carolina, *Michaux.*—We find no specimen in Michaux's herbarium. To this species Nuttall referred a plant, found chiefly upon the Catawba ridge, N. Carolina, in open bushy forests, which is thus noticed: "This is the lowest species with which I am acquainted, and possesses the aspect of an herbaceous Psoralea. Stem purplish, somewhat decumbent, pubescent. Leaves often 2 inches long and one wide, minutely pubescent on both sides: common petiole three-fourths of an inch in length, in which particular it strikingly differs from every other known species. Stipules small, linear-lanceolate, acute. Legume small, with a subulate point." *Nutt. gen.* 1. *p.* 281.—This plant, which differs in some respects from the character given by Michaux, Mr. Nuttall is now inclined to consider a distinct species, which he proposes to call B. fraxinifolia. But we are uncertain whether it be distinct from some of the species described above.

49. THERMOPSIS. *R. Br. in hort. Kew.* (*ed.* 2.) 3. *p.* 3.

Thermia, *Nutt.*

Calyx oblong, campanulate, sometimes a little curved, acute at the base, 4–5-cleft at the summit, slightly bilabiate. Vexillum about the length of the wings, broad, roundish, emarginate, the sides reflexed: wings oblong: keel nearly straight, obtuse; the petals somewhat united. Stamens persistent. Ovary nearly sessile: ovules numerous: style slightly incurved: stigma minute. Legume much compressed, oblong-linear, sometimes falcate, many-seeded. Seeds oblong-subreniform, compressed. Radicle very short, incurved.—Perennial herbs. Leaves 3-foliolate; the uppermost sometimes simple. Stipules large and foliaceous, distinct. Flowers large (yellow or rarely white), in terminal racemes: pedicels ebracteolate.

1. *T. lanceolata* (R. Brown): leaves nearly sessile, the lower and the highest ones often simple; leaflets oblong-lanceolate, silky-puberulent on both sides; stipules lanceolate, half the length of the leaflets; flowers geminate or somewhat verticillate; bracts large; calyx convex posteriorly, cleft to the middle; the 3 lower segments lanceolate; the upper 2-cleft at the summit; legumes...... *R. Br. l. c.; DC. prodr.* 2. *p.* 99; *Hook. fl. Bor.-Am.* 1. *p.* 128; *Deless. ic.* 3. *t.* 60. Sophora lupinoides, *Pallas, Astr. t.* 89. Podalyria lupinoides, *Willd. spec.* 2. *p.* 504.

Nootka Sound, *DC.*—A native of Kamtschatka and Altaic Siberia.

pubescent

2. *T. rhombifolia* (Nutt.): leaves petioled; leaflets obovate-cuneiform, silky-puberulent, at length nearly glabrous; stipules ovate or cordate, acute, as long as the petioles; flowers alternate or geminate; bracts oval, shorter than the pedicels; calyx short; the teeth triangular, acute, the upper one 2-toothed; legumes elongated, falcate, pendulous, glabrous.—*Nutt.! gen.* 1. *p.* 283 (under Thermia); *Richards. appx. Frankl. journ. ed.* 2. *p.* 13; *DC.! prodr.* 2. *p.* 99; *Hook. fl. Bor.-Am.* 1. *p.* 128, *t.* 47. Cytisus rhombifolius, *Pursh, fl.* 2. *p.* 741.

Near Fort Mandan, Missouri, *Bradbury, Nuttall!* Plains of the Platte, *Dr. James! Nuttall!* About the Saskatchawan, *Richardson* &c. and in the Rocky Mountains, *Nuttall.* May.—Flowers smaller than in T. lanceolata, which the species resembles, yellow. Legumes about 3 inches long, here and there narrowed by the abortion of the seeds, but not articulated.

3. *T. fabacea* (DC.): leaves petioled; leaflets broadly oval; stipules broadly ovate, obtuse, shorter than the petiole; flowers alternate. *DC. l. c.*; *Hook. l. c.* Sophora fabacea, *Pallas, Astr. t.* 90, *f.* 2.

Near the sources of the Utalla and Wallawallah, in the vallies of the Blue Mountains of Oregon. *Douglas.*—Found by Pallas in Kamtschatka. We are wholly unacquainted with this species. Hooker remarks that his specimen under this name has the leaves thrice as large, and the peduncles thrice as long as in the preceding species.

4. *T. montana* (Nutt.! mss.): "somewhat silky-pubesent, at length glabrous; leaves petioled; leaflets lanceolate, narrowed at the base; stipules oblong-ovate, scarcely longer than the petioles; flowers alternate or sometimes geminate, subsessile; teeth of the calyx very short; legumes linear, erect, nearly straight, silky, at length nearly glabrous.

"High vallies of the Rocky Mountains, in bushy places by streams, near the line of Upper California. June.—A showy species, with a spike of bright yellow flowers 3–4 inches long. Leaflets 1–1½ inch long. Bracts small. Teeth of the calyx very broad and short, acute, nearly equal." *Nuttall.*—The vexillum is considerably shorter than the wings. Legumes narrow, about 10-seeded.

5. *T. macrophylla* (Hook. & Arn.): stem angled; the upper portion, as well as the petioles, calyx, and ovaries, villous; leaves petioled; leaflets obovate-elliptical, tomentose-pubescent beneath, glabrous above; stipules large, ovate, acute, longer than the petioles; flowers alternate, on short pedicels; calyx short; the 3 lower teeth acute, the upper slightly 2-toothed; legumes oblong-linear, straight, erect, 4–5-seeded.—*Hook. & Arn.! bot. Beechey, suppl. p.* 329.

β. much less pubescent in all its parts. [illegible]

California, *Douglas!*—Leaflets 3–4 inches long. Stipules 1½ inch in length. Bracts rather shorter than the calyx. Legumes nearly 2 inches long, hairy when young.—In the smoother form, of which the specimens are in a much less advanced state, the teeth of the calyx are shorter and broader.

50. PICKERINGIA. Nutt. mss. (not of *jour. acad. Philad.**)

Calyx campanulate, somewhat truncate, repandly 4-toothed; the teeth nearly equal. Vexillum orbicular, emargniate, plicate in the middle, as long as the oblong wings: keel-petals distinct, equal and similar to the wings, straight, obtuse. Ovary on a short stipe, many-ovuled: style filiform, incurved: stigma minute. Legume unknown.—A low and stout much-branched shrub; the branches somewhat spiny. Leaves sessile, sempervirent, small, 3-foliolate. Stipules none, or very caducous. Flowers (purple) axillary, subsessile.

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* The genus originally established under this name, in the Journal of the Academy of Natural Sciences, not being distinct from Ardisia, Mr. Nuttall has dedicated this plant to the same acute naturalist.

P. montana (Nutt.! mss.)

"Summits of the mountains in the vicinity of St. Barbara, California.—A low densely branched shrub, spreading horizontally six or eight feet in extent: branches brownish-gray; the wood white: the branchlets usually terminating in stout spinous points. Leaves crowded: leaflets sessile, scarcely an inch in length, oblong-cuneiform or oblanceolate, thick, slightly pubescent when young, pale beneath. Flowers solitary in the axils of the leaves at the extremity of the branches, about the size of those of Baptisia tinctoria. Calyx short, very slightly toothed. Stamens distinct, somewhat persistent, equal. Ovary linear, pubescent." *Nuttall.*—We have also specimens from Mr. Douglas's Californian collection, which, like those of Mr. Nuttall, want the fruit. Although allied to Anagyris, it probably forms a distinct genus.

2. *Leaves unequally pinnate (simple in* Cercis*): trees or shrubs.* (Sophoreæ, *Benth.*)

51. SOPHORA. *Linn.; R. Br. in hort. Kew.; DC. prodr.* 2. *p.* 95.

Sophora & Styphnolobium, *Schott; Benth. comm. Leg.*

Calyx broadly campanulate, obliquely truncate or somewhat 5-toothed at the summit, often somewhat turbinate or obconic at the base. Vexillum obovate or roundish, about the length of the other petals: keel obtuse, nearly straight, the petals somewhat united below the apex. Ovary nearly sessile, linear: ovules numerous: style nearly straight or incurved: stigma minute. Legume moniliform, indehiscent, (dry or fleshy,) not winged. Radicle usually inflexed or incurved.—Trees, shrubs, or sometimes herbaceous plants, with unequally pinnate leaves. Stipules subulate or none. Racemes axillary or terminal, sometimes paniculate. Bracts subulate, minute, often caducous.

§ 1. *Calyx campanulate, rarely somewhat turbinate at the base: vexillum erect or a little spreading, entire or slightly emarginate: stamens not exserted: legume dry: seeds subglobose, not strophiolate: radicle slightly incurved: stipules none.*—EUSOPHORA, Benth.

1. *S. tomentosa* (Linn.): arborescent; leaflets 15–19, roundish-oval, very obtuse, canescently tomentose on both sides (as also the calyx); raceme terminal, elongated. *DC.—Linn. spec.* 1. *p.* 373; *Lam. ill. t.* 375, *f.* 2; *DC. prodr.* 2. *p.* 95. S. occidentalis, *Linn. spec.* (*ed.* 2.) 1. *p.* 533; *Swartz, obs. bot. p.* 154. S. littoralis, *Schrader; DC. l. c.*

β. truncata: calyx somewhat obliquely truncate, the margin entire; leaflets tapering at the base, glabrous above when old, canescently tomentose beneath; vexillum emarginate.

Tampa Bay, Florida (β.), *Dr. Hulse! Dr. Leavenworth!*—We have no specimens either of the West or East Indian plant; but those from Florida agree so perfectly with Swartz' description of S. occidentalis, the truncate calyx excepted, that we cannot think them specifically distinct. The calyx is said by Swartz to be gibbous above, obtusely 5-toothed, the 3 lower teeth longest. The young racemes and branches, in our plant, are velvety-pubescent; the former much elongated; the flowers large and apparently pale yellow; the calyx with a narrowed base, at length separating from the torus and remaining loose at the base of the legume; which is silky when young, but nearly glabrous when mature, with 5 or 6 mostly approximate nodes.

§ 2. *Calyx somewhat obconic: vexillum reflexed, entire: stamens not exserted: nodes of the legume somewhat pulpy: seeds compressed, strophiolate: radicle inflexed: stipules none.*—STYPHNOLOBIUM, Schott.

2. S. *affinis:* arborescent, nearly glabrous; racemes axillary, simple; leaflets 13–15, elliptical, mucronulate; calyx very short, campanulate, abruptly attenuate at the base, obscurely 5-toothed; ovary villous; legumes somewhat pubescent.

Prairies of Arkansas, on Red River, &c. *Dr. Leavenworth!* Texas, *Drummond!* May.—A shrub or tree, about 25 feet high, allied to Sophora Japonica, but a very distinct species; the calyx being more like that of a proper Sophora, the leaflets smaller and nearly the same color both sides, the racemes lateral, &c. Legumes with 4–5, or by abortion 1–2 subglobose at length somewhat pulpy (sweetish) nodes. Seeds oval, somewhat compressed, scarcely strophiolate. Radicle incurved.

§ 3. *Calyx campanulate, obtuse at the base: vexillum spreading or reflexed, entire or emarginate: stamens not exserted, often a little united at the base: legume dry: seeds estrophiolate: radicle inflexed: stipules subulate: stems herbaceous.*—PSEUDOSOPHORA, DC.; Benth.

3. S. *sericea* (Nutt.): herbaceous, low, silky-canescent; stems decumbent or ascending, branching from the base; leaflets very small, about 21, elliptical or cuneate-oval, glabrous above; raceme terminal, short, subsessile; calyx gibbous posteriorly, longer than the pedicels, 5-toothed, the teeth short; stamens slightly diadelphous (9 and 1) at the base; vexillum reflexed; petals of the keel nearly distinct, acuminate-mucronate.—*Nutt.! gen.* 1. *p.* 280; *DC. l. c.; Torr.! in ann. lyc. New York,* 2. *p.* 174. Patrinia sericea, *Raf.* Astragalus carnosus, *Pursh* (except the fruit), ex *Nutt.*

High plains of the Missouri and the Platte, *Bradbury, Nuttall! Dr. James!* extending nearly to the Rocky Mountains according to Nuttall.—Plant 6–8 inches high. Leaves crowded: leaflets about 2 lines long, Raceme or spike not exserted beyond the leaves, 2–4 inches long, crowded. Flowers nearly as large as in S. alopecuroides, white. Ovary canescent. Fruit unknown.—This interesting plant is well described by Nuttall, and considered to be related to S. alopecuroides of Asia. In our specimens of the latter we find the filaments somewhat connate at the base (certainly not so manifestly united as in the present species), although both Ledebour and Bentham state that they are wholly distinct.

52. CLADRASTIS. *Raf. neog.* (1825.)

Calyx cylindrical-campanulate, somewhat obliquely obconic at the base, 5-toothed at the apex; the teeth nearly equal, very short and obtuse. Petals on rather long claws, somewhat papilionaceous: vexillum large, roundish, entire, scarcely longer than the wings, reflexed-spreading: wings oblong, straight, very obtuse, somewhat biauriculate at the base: keel-petals as long as the wings, distinct, broadly oblong, nearly straight, very obtuse, subcordate or slightly biauriculate at the base. Stamens distinct: filaments filiform, incurved near the summit, glabrous. Ovary stipitate, linear, pubescent, many-ovuled: style glabrous, subulate, incurved: stigma minute. Legume on a short stipe, linear, much compressed, membranaceous, the sutures not margined, tardily dehiscent, 4–6-seeded. Seeds oblong, compressed, scarcely strophiolate. Cotyledons oblong, flat: radicle very short, somewhat inflexed.—A small tree (the wood yellow). Leaves pinnately 7–11-foliolate; the leaflets usually alternate: petioles dilated at the base and including the buds of the succeeding year. Stipules none. Inflorescence terminal: racemes mostly paniculate below; the lateral ones arising from the axil of a solitary flower; the terminal one elongated: bracts minute, very caducous: pedicels filiform, ebracteolate. Flowers large, white.

An interesting genus, wholly distinct both from Virgilia (V. Capensis) and Calpurnia, *E. Mey.* (V. aurea, *Lam.* *&c.*) The calyx of V. Capensis, we may here remark, seems to us very incorrectly described as "inæqualiter dentatus subbilabiatus": in all the specimens we have examined it is rather deeply bilabiate; with the upper lip more or less 2-cleft and the lower entire and acute.

C. tinctoria (Raf.! l. c.)—Virgilia lutea, *Michx. f. sylv.* 2. *p.* 18, *t.* 78; *Pursh, fl.* 1. *p.* 309; *DC. l. c.*

Hill-sides, in deep fertile soil, West Tennessee, *F. A. Michaux! Dr. Currey!* Kentucky River, *Dr. Short!* April–May.—Tree 20–40 feet high, sometimes nearly one foot in diameter, with a smooth greenish bark: the heart-wood yellow, and readily imparting its color to water. Leaves and branches nearly glabrous: leaflets petiolulate, broadly oval, the terminal one rhomboid-ovate, acuminate, 3–4 inches in length. Flowers somewhat resembling those of the Common Locust; the thyrsoid racemes 6–10 inches long, nodding or pendulous. Legumes 3–4 inches long and about ½ of an inch in width, flat, even, the margin often somewhat undulate by the abortion of a portion of the seeds.—Pursh and Nuttall, being misled by the specific name of Michaux, state the flowers to be yellow, and the error is copied by De Candolle, although the flowers are represented of their proper color in Michaux's Sylva.—*Yellow-wood.*

53. CERCIS. *Linn.*; *Lam. ill. t.* 328; *Gærtn. fr. t.* 144.

Calyx broadly campanulate, 5-toothed, broadly obconic and somewhat oblique at the base. Petals scarcely papilionaceous, all distinct: vexillum smaller than the wings: keel-petals broadly oval, larger than the wings, overlapping each other at the back. Stamens somewhat unequal. Legume oblong, acute at each end, slightly stipitate, coriaceo-membranaceous, much compressed, many-seeded; the upper suture with a winged margin. Seeds obovate, compressed; the inner coat thickened. Embryo straight: cotyledons flat.—Trees, with simple cordate leaves, and membranaceous caducous stipules. Flowers deep rose-color, appearing before the leaves: pedicels fascicled along the branches, 4–8 together.

The legume of Cercis is wholly similar to that of Calpurnia and Bowdichia, and its affinity with Cladrastis is evident.

1. *C. Canadensis* (Linn.): leaves broadly ovate-cordate, acuminate, hairy along the veins beneath.—*Linn.! spec.* 1. *p.* 374; *Michx.! fl.* 1. *p.* 265; *Pursh, fl.* 1. *p.* 308; *Torr.! fl.* 1. *p.* 441; *DC. prodr.* 2. *p.* 518; *Darlingt. fl. Cest. p.* 435.

Banks of rivers, &c. from (Canada, according to *Pursh*) New Jersey! Pennsylvania! and Ohio! to Louisiana! and Florida! March–April.—Tree 15–30 feet high, with somewhat geniculate branches. Flowers small, purplish, acid to the taste: pedicels filiform.—*Red-bud. Judas-tree.*

TRIBE IX. CASSIEÆ. *Bronn; DC.* (excl. gen.)

Corolla regular or mostly irregular, not papilionaceous. Stamens 10, or sometimes fewer, distinct: anthers sometimes of 2 forms. Legume continuous (not jointed), 1-celled, often intercepted between the seeds, dehiscent. Seeds frequently with a small quantity of albumen. Embryo straight.—Trees, shrubs, or herbs. Leaves (usually abruptly) pinnate or bipinnate, not stipellate.

54. HOFFMANSEGGIA.

Hoffmanseggia & Pomaria, *Cav. ic.; DC.*—Melanosticta, *DC.?*

Sepals 5, united into a short obconic base, somewhat equal. Petals 5, obovate, on short claws, somewhat unequal, spreading, the upper one concave, one or more of them often glandular at the base. Stamens 10: filaments mostly hairy or glandular, and thickened or dilated towards the base, nearly equal: anthers oval, nearly uniform. Style as long as the stamens, somewhat thickened toward the apex. Legume oblong or linear, often falcate, compressed, dry, 2-valved, 2-seeded.—Low perennial herbs or suffrutescent plants, often dotted with black glands. Leaves abruptly or unequally bipinnate. Racemes opposite the leaves: flowers yellow. Glands either sessile or pedicellate.

We unite Pomaria and Hoffmanseggia of Cavanilles without hesitation. There appears to be no essential difference in the flowers, and both have the pinnæ of the leaves either equal in number or with a terminal one, the racemes opposite the leaves, &c. Our H. Drummondii differs from Hoffmanseggia proper, chiefly in the broader and shorter pods, and in wanting the glandular tuft at the base of the 4 lower petals; and from Pomaria in the straight filaments, the little tuft at the base of the larger upper petal, and the pedicellate glands. The plant which in the account of Dr. James's Collection was referred to Pomaria glandulosa, *Cav.* (Hoffmanseggia glandulosa, *T. & Gr.*) is certainly a different, though nearly allied species; the stipules being entire, and the leaves not abruptly pinnate (as inadvertently described), the legume more lunate, &c. There is nothing in the character of Melanosticta, *DC.* to distinguish it from the present genus.

§ 1. *Segments of the calyx equal, rather persistent: petals subsessile; the upper one broadest and glandular at the base: filaments somewhat glandular-hairy below: one of the anthers imperfect: ovary glabrous: stigma terminal, tubular: legume ovate-oblong, about 2-seeded: glands pedicellate.*—Hoffmanseggiaria.

1. *H. Drummondii:* glabrous, with a few scattered pedicellate glands; stem diffuse, suffrutescent; pinnæ 3 (digitate), abruptly 8–12-foliolate; leaflets elliptical, obtuse or retuse; legumes lunate-ovate, glabrous.

Texas, *Drummond!*—Plant low and much branched, with a very few subulate scarcely capitate glands on the lower side of the petioles, or on the lower surface or apex of the leaflets, the pedicels, margin of the calyx &c., rarely on the branches. Leaves small.—Upper petal with reddish spots.—We have not observed the stipules: the seeds have also fallen from the pods in our specimens; but there are about 5 ovules. In some flowers, we observe that the alternate filaments are almost filiform and nearly glabrous; while those opposite the sepals are thickened and clothed with thick glandular hairs; but in others they are all nearly similar.

§ 2. *Segments of the calyx (equal ex* Cav., *or the lower one much broader and carinate-concave) at length deciduous from the persistent base: petals not glandular at the base, the superior one smallest: filaments declined, hairy below, all fertile: ovary clothed with stellate scales or hairs: stigma lateral and somewhat hooded: legume ovate or oblong, 2–3-seeded: glands depressed.*—Pomaria, *Cav.* (Character from the N. American species.)

2. *H. Jamesii:* canescently pubescent; stipules subulate, entire; pinnæ 5 (2 pairs and a terminal one), abruptly 10–16 foliolate; legume broadly oblong, somewhat lunate; leaves, calyx, petals, and legumes sprinkled with sessile black glands.—Pomaria glandulosa, *Torr.! in ann. lyc. New York,* 2. *p.* 193, not of *Cav.*

Sources of the Canadian River, *Dr. James!*—A low much branched shrubby plant. Leaves with the 3 upper pinnæ arising from the same point. Leaflets oval, obtuse at both ends, nearly glabrous above. Racemes elongated, opposite the leaves. Flowers nodding or reflexed, rather large. Calyx a little oblique; the 4 upper segments lanceolate, acute; all membranaceous. Upper petal marked with reddish spots. Style subulate, dilated above and somewhat gibbous at the apex; the stigma turned to the upper side, and somewhat hooded, the membranaceous upper portion of the style being slit for some distance on that side. Legumes about an inch long, scabrous, sprinkled with glands, flat, 2–3-seeded. Seeds broadly oval, compressed.

55. CASSIA. *Linn.; Lam. ill. t.* 382; *Vogel, syn. gen. Cass.* (1837.)

Sepals slightly united at the base, mostly a little unequal, deciduous. Petals 5, unequal. Stamens 10, often unequal, the three upper commonly abortive, the 5 alternate ones rarely wanting: anthers dehiscent at the apex, or sometimes by a foramen at the base. Legume terete or compressed, woody, coriaceous or membranaceous, 1-celled, or many-celled by transverse partitions, which are sometimes filled with pulp. Seeds anatropous, with a straight embryo, surrounded with a small quantity of albumen.—

Trees, shrubs, or herbaceous plants, with simply abruptly pinnate leaves: the leaflets opposite. Flowers mostly yellow.

§ 1. *Sepals mostly obtuse: stamens unequal; the lower ones with thick quadrangular fertile anthers, opening by 2 pores at the apex; the 3 upper sterile, smaller and deformed: legume cylindrical or somewhat compressed, woody or somewhat membranaceous, scarcely dehiscent, many-celled by transverse partitions: seeds compressed, all (or at least the lower ones) horizontal* (i. e. *transverse with respect to the valves*).—CHAMÆFISTULA, DC.; Vogel.

* ***Legume membranaceous, somewhat compressed, but tumid; the upper seeds sometimes vertical, the lower always horizontal.***—**Oncolobium,** ***Vogel.***

1. *C. occidentalis* (Linn.): annual, erect, branched, glabrous; leaflets 6–12, ovate-lanceolate or ovate, very acute or acuminate, somewhat ciliate; petiole with a sessile obtuse gland at the base; racemes axillary, 3–5-flowered, much shorter than the leaves, those at the summit of the branches somewhat panicled; legumes long, with a tumid border, glabrous.—*Linn.! spec.* 1. *p.* 377; *Michx.! fl.* 1. *p.* 261; *Bot. reg. t.* 83; *Ell. sk.* 1. *p.* 471; *Audub. birds of Amer. t.* 35; *W. & Arn. prodr. Ind. Or.* 1. *p.* 290; *Vogel, l. c. p.* 21. C. Caroliniana, *Walt. Car. p.* 134. C. ciliata, *Raf. fl. Ludov.* C. linearis, *Michx.? Ell. l. c.?*

Near buildings, &c., Virginia! and South Carolina! to Louisiana! July. —Stem 4–6 feet high. Leaflets usually about 5 pairs, serrulately ciliolate. Stipules deciduous. Petals large, yellow, not spotted. Legume somewhat coriaceous, about 5 inches long, 30–50-seeded.

§ 2. *Sepals obtuse: anthers of the lower stamens fertile, thick and quadrangular, opening by 2 pores at the apex; the 2–3 upper ones smaller, sterile and deformed: legume compressed, narrow, many-celled with membranous transverse partitions, membranaceous: seeds vertical* (i. e. *compressed parallel with the valves*), *their longer diameter in the same direction with the legume.*—PROSOSPERMA, Vogel.

2. *C. obtusifolia* (Linn.): annual, branching, nearly glabrous; leaflets 6 or rarely 4, obovate, obtuse, slightly mucronate, a little pubescent beneath when young; a cylindraceous gland between the two lower pairs; stipules linear-subulate, arcuate, rather deciduous; legumes very long and narrow, glabrous, quadrangular-compressed, recurved.—*Linn. spec.* 1. *p.* 377; *DC. l. c.*; *Vogel, l. c. p.* 24. C. fœtida, &c., *Dill. Elth. t.* 72, *f.* 72.

β. humilis (Vogel): gland single between the lower pair of leaflets.—C. humilis, *Colladon, monogr.*; *DC. l. c.* C. Tora, *Walt.! l. c.*; *Pursh, fl.* 1. *p.* 305; *Ell. sk.* 1. *p.* 471.

In dry soils, S. Carolina! to Florida! west to the Canadian River, Arkansas, *Dr. James!* July–Oct.—Stem 4–5 inches to 3 feet in height. Leaflets scarcely ciliolate. Legumes about 6 inches long, recurved-arcuate.—As the legumes of our plant are always recurved, it belongs to C. obtusifolia, but we know not whether the other distinctions between it and C. Tora are constant.

§ 3. *Sepals obtuse: anthers of the lower stamens fertile, thick and quadrangular, opening by 2 pores at the apex: the 3 upper sterile and deformed: legume compressed, more or less many-celled with transverse partitions,* *membranaceous or coriaceous, dehiscent: seeds usually compressed, vertical, their long diameter in the direction of the breadth of the legume, longer than the funiculus.*—CHAMÆSENNA, DC. (partly); Vogel.

3. *C. Marilandica* (Linn.): perennial, glabrous or somewhat pubescent with scattered spreading hairs; leaflets 12–18, lanceolate-oblong, mucronate; gland near the base of the petiole clavate; stipules linear-subulate, caducous; racemes axillary, very short, somewhat paniculate at the summit of the branches; legumes linear, somewhat curved, at length nearly glabrous.—*Linn.! spec.* 1. *p.* 378; *Michx.! fl.* 1. *p.* 261; *Pursh, l. c.*; *Schkuhr. handb.* 1. *t.* 113; *Ell. sk.* 1. *p.* 473; *Bigel. med. bot. t.* 39; *Bart. veg. mat. med. t.* 12; *DC.! l. c.*; *Torr.! fl.* 1. *p.* 439; *Darlingt.! fl. Cest. p.* 439. Senna foliis Mimosæ, &c., *Dill. Elth. t.* 260, *f.* 339. C. ligustrina, *Linn.* as to syn. *Gronov.! Virg.*; *Pursh, fl.* 1. *p.* 306.
In alluvial soil, New England States! and New York! to S. Carolina and throughout the Western States. July–Aug.—Stem 3–4 feet high. Leaflets conspicuously mucronate, slightly ciliate. Petals yellow, obovate-cuneiform. Anthers blackish. Legume 3–4 inches long, hairy when young.—*Wild Senna.*

4. *C. biflora* (Linn.): shrubby: leaflets 4–10 pairs, oblong or obovate, mucronate, pubescent or glabrous; a terete acute gland between the lowest pair; peduncles 2–4-flowered; the flowers somewhat geminate; legume narrowly linear, transversely articulated, membranaceous, pubescent. *Vogel.*—*Linn. amœn. acad.* 5. *p.* 397; *DC. prodr.* 2. *p.* 495; *Vogel, l. c. p.* 29. C. galegifolia, *Linn.*, C. tenuissima, *Linn.*, and C. frondosa, *Ait.* fide *Vogel.*
Texas, *Drummond!*—We have seen only a very imperfect specimen in Drummond's Texan Collection, which appears to belong to this species.

§ 4. *Sepals obtuse, acute, or acuminate: stamens* 10, *or by abortion* 9–5*: anthers all fertile, mostly of unequal length, quadrangular, linear, opening at the apex by* 2 *pores or clefts: legume compressed, coriaceous, more or less completely many-celled by transverse partitions: seeds vertical.*—LASIORHEGMA, Vogel.

5. *C. Chamæcrista* (Linn.): annual, hairy or glabrous, erect or a little decumbent; leaflets 20–30, linear-oblong, oblique at the base, obtuse, mucronate; gland below the lowest pair of leaflets, sessile or slightly pedicellate, cup-shaped or depressed; stipules and bracts subulate, striate, persistent; fascicles of flowers supra-axillary; pedicels slender, bracteolate near the summit; flowers large; sepals attenuate-acuminate; anthers 10, all fertile, subsessile, very long; style filiform.—*Linn.! spec.* 1. *p.* 379; *Walt.! Car. p.* 136; *Michx.! l. c.*; *Smith, in Abbot, ins. Georg. t.* 94; *Bot. mag. t.* 107; *Pursh, l. c.*; *DC.! prodr.* 2. *p.* 503; *Darlingt. fl. Cest. p.* 433; *Vogel, l. c. p.* 62, (not of *Swartz.*)
α. nearly glabrous; fascicles 2–3-flowered; 2–3 of the petals with a purple spot near the base; 4 of the anthers yellowish, the others purple or often all yellowish; legumes glabrous.
β. somewhat glabrous; fascicles several-flowered; petals not spotted at the base; anthers all yellow; legumes somewhat glabrous.—C. fasciculata, *Michx. fl.* 1. *p.* 262; *Ell. l. c.*
γ. hirsutely pubescent (except the leaflets); legumes somewhat hairy, especially along the sutures; otherwise as in *α.*—C. Chamæcrista, *Michx. l. c.*; *Ell. l. c.*

δ. hirsutely villous (the leaflets linear-elliptical and glabrous), stout; flowers very large; the two lower petals spotted near the base; anthers all blackish-purple.

ε. softly villous (the leaflets pubescent;) two of the petals a little spotted at the base; anthers mostly purplish at the base; legumes (young) softly villous.

ζ. cinereous-pubescent, much branched; flowers rather smaller; 2–4 of the petals purplish at the base; anthers slightly unequal, all purple.—C. cinerea, *Cham. & Schlecht. in Linnæa*, 5. *p.* 599?

In dry sandy soil, Massachusetts! and New York! to Florida! Louisiana! Texas! and west to the Canadian River, *Dr. James!* δ. Mountains of Kentucky, *Dr. Short!* ε. Louisiana, *Dr. Hale!* ζ. Texas, *Drummond!* July–Sept.—Flowers bright yellow, large and showy.—None of our specimens wholly accord with the C. fasciculata, *Michx.* We have glabrous forms with yellow anthers; but in these two of the petals are always more or less spotted with purple. The var. δ. is very large in all its parts: ε. is smaller, but clothed throughout with remarkably soft villous hairs; the var. ζ. has the stem, leaves, calyx, &c. more or less cinereous-pubescent, the flowers are rather smaller, and the pedicels sometimes shorter.—*Sensitive Pea. Partridge-Pea.*

6. *C. nictitans* (Linn.): annual, erect or decumbent, somewhat pubescent; leaflets 12–30, oblong-linear, obtuse, mucronate, somewhat oblique at the base; gland beneath the lowest pair of leaflets slightly pedicellate; stipules and bracts broadly subulate, striate, persistent; fascicles supra-axillary, 2–3-flowered; the pedicels very short, bracteolate; flowers small; sepals acuminate; stamens 5, nearly equal; style very short.—*Linn.! l. c. & hort. Cliff. t.* 36; *Michx.! l. c.; Ell. sk.* 1. *p.* 474; *DC.! l. c.; Darlingt. fl. Cest. p.* 432; *Vogel, l. c. p.* 62. C. procumbens, *Willd.* (as to the North American plant.)

β. *aspera:* stem and legumes hirsute with spreading hairs; stamens 7–9; ovaries very villous.—C. aspera, *Ell.! sk.* 1. *p.* 474.

In old fields and dry sandy soil, Massachusetts! and New York! to Florida! and Louisiana! β. Eding's Island, near Beaufort, S. Carolina, *Elliott!* July–Sept.—Pedicels shorter than the flowers. Petals small, not spotted. Anthers rather short, mostly all purple. Legume somewhat hairy.—Readily distinguished by its very small flowers, short pedicels, &c. The C. aspera of Elliott seems to be nothing but a variety of this: in the specimen from his herbarium which we have examined, the anthers are mostly purple. The leaves in this and the preceding are very sensitive; whence the two species are popularly called *Sensitive Pea.*

C. ligustrina (Linn.) was founded on a West Indian plant (C. ligustri folio, *Plumier; Dill. Elth. t.* 269, *f.* 338), to which the reference to *Gronov. Virg.* (which belongs properly to C. Marilandica) was wrongly adduced. It seems not to be a native of N. America; and Pursh has, as we think, inadvertently added the mark *v. v.*, stating that it grows in cultivated grounds from Virginia to Georgia.

C. (*Chamæsenna*) *angustisiliqua* (Lam.), or a species nearly allied to this, was collected in Key West by *Mr. Bennett*, but the specimen is too incomplete for satisfactory determination. The gland is very large and thick, commonly placed towards the base of the petiole, but sometimes between the lowest pair of leaflets. We have not seen the fruit.

56. CÆSALPINIA. *Linn.; Swartz, obs. p.* 165; *Willd. spec.* 2. *p.* 530.

Cæsalpinia & Poinciana, ***Linn. & authors.***

Sepals mostly unequal, united below into a somewhat persistent cup-shaped base. Petals 5, unequal, unguiculate. Stamens 10, all fertile, nearly equal: filaments ascending and hairy at the base. Style filiform. Legume, unarmed, compressed, wingless, 2-valved, several-seeded, 1-celled, or intercepted internally between the seeds. Seeds compressed: cotyledons flat.—Prickly or unarmed trees or shrubs, with abruptiy bipinnate leaves, and racemose or corymbose flowers.

§ 1. *Stamens and style filiform, much exserted: petals fimbriated or sometimes entire: flowers large, corymbosely panicled.*—POINCIANA, Linn.

1. *C. pulcherrima* (Swartz): aculeate; leaflets obovate; calyx glabrous; petals fimbriate, on long stipelike claws; flowers on long pedicels. *DC.*—*Swartz, l. c.; Willd. l. c.* Poinciana pulcherrima, *Linn.; Bot. mag. t.* 995; *DC. prodr.* 2. *p.* 484.
Key West, *Mr. Bennett!*—Common in the West Indies; supposed to have been introduced from the East Indies. A shrub, with very showy orange-colored and variegated flowers. The petals in the specimen from Key West are very slightly fringed.

57. GUILANDINA. *Linn.* (partly); *Juss. gen. p.* 350; *Lam. ill. t.* 336.

Sepals a little unequal, united into a very short urceolate base. Petals 5, sessile, nearly equal. Stamens 10, all fertile: filaments villous at the base. Style short. Legume globose-ovate, a little compressed, echinate. Seeds large, bony, shining, nearly globose.—Trees or shrubs, with abruptly pinnate leaves; the stem and petioles armed with hooked prickles. Flowers in spicate racemes: bracts rather long, deciduous.

1. *G. Bonduc* (Linn.): leaflets oval or ovate, more or less pubescent, 3–8 pairs, with 1–2 small recurved prickles between them on the under side. *W. & Arn.*—*Linn. sp.* 1. *p.* 381; *DC. prodr.* 2. *p.* 480. G. Bonducella, *Linn.; Swartz, obs. bot. p.* 167.
Key West, *Mr. Bennett!* Tampa Bay, Florida, *Dr. Leavenworth!*—Common in the West Indies, perhaps introduced from the East.

58. GYMNOCLADUS. *Lam. dict.* 1. *p.* 773, *& ill. t.* 823.

Flowers diœcious. Calyx tubular-infundibuliform, the limb 5-cleft; lobes lancolate, equal. Petals 5, oblong, somewhat longer than the lobes of the calyx, inserted into the summit of the tube. Stamens 10, included, inserted with the petals; those opposite the sepals a little longest. Legume oblong, compressed, very large, thick, pulpy within.—A slender tree, unarmed, with stout thick branches. Leaves unequally bipinnate; the leaflets ovate, acuminate, petiolulate. Flowers in long axillary racemes, greenish white.

G. Canadensis (Lam. l. c.)—*Michx.! fl.* 2. *p.* 241, *t.* 51; *Pursh, fl.* 1. *p.* 304; *Michx. f. sylv.* 1. *t.* 50; *DC.! prodr.* 2. *p.* 480. Guilandina dioica, *Linn.! spec.* 1. *p.* 381.

In woods along the banks of rivers and lakes, Canada and Western New York! to Kentucky! and Tennessee. West to the Canadian River, *Dr. James!* May–June.—Tree 50–80 feet high. Leaves about 1–3 feet long: pinnæ 4–7; the lowest a single pair of leaflets, the others 7–13-foliolate; leaflets mostly alternate. Legumes 6–10 inches long, nearly 2 inches wide.—*Coffee-tree.*

59. GLEDITSCHIA. *Linn.; Lam. ill. t.* 857; *DC. prodr.* 2. *p.* 479.

Flowers polygamous. Sepals 3–4–5, equal, united at the base. Petals as many as the sepals, or fewer by the abortion of one or two, or by the union of the two lower ones. Stamens as many as the sepals and opposite them, or by abortion fewer. Style short: stigma pubescent. Legume stipitate, continuous, often intercepted internally between the seeds, dry or with a quantity of sweet pulp surrounding the seeds. Seeds oval: testa hard, crustaceous. Embryo yellowish, surrounded with a small quantity of albumen: cotyledons flat.—Trees; the supra-axillary branchlets often converted into simple or branched spines. Leaves abruptly pinnate or bipinnate (often on the same tree); the leaflets somewhat serrate! Flowers small, greenish, spicate. The terminal flowers sometimes produce two united ovaries, ex *DC.*

1. *G. triacanthos* (Linn.): spines stout, mostly triple or compound; leaflets lancolate-oblong; legumes linear-oblong, flat, much elongated, somewhat falcate, many-seeded; the intervals filled with a sweet pulp.—*Linn.! sp.* 2. *p.* 1056; *Michx.! fl.* 2. *p.* 257; *Duham. arb.* (*ed. nov.*) 4. *t.* 25; *Michx. f. sylv.* 2. *t.* 79; *Willd.! sp.* 4. *p.* 1097; *Pursh, fl.* 1. *p.* 221; *Ell. sk.* 2. *p.* 709; *DC.! l. c.*

β. inermis (Pursh, l. c.): stem unarmed, the branches nearly so.—*DC. mem. Leg. t.* 22, *f.* 109.

γ.? brachycarpos (Michx. l. c.): spines short; legumes oblong, much shorter (3–5 inches).—G. brachycarpa, *Pursh, l. c.; DC. l. c.*

In rich soil, Pennsylvania! to Georgia and Louisiana; common also in cultivation. July.—A large tree; the trunk sometimes attaining the diameter of 3 to 4 feet. Legumes 12–18 inches long, somewhat twisted. Wood hard, but less valuable than that of the Flowering or True Locust.—De Candolle has noticed a monstrous state of this species, in which all the leaflets are confluent.—*Honey-Locust. Sweet Locust.*

2. *G. monosperma* (Walt.): spines slender and few, sometimes 3-parted; leaflets ovate-oblong; legumes broadly oval, oblique, flat, destitute of pulp, 1-seeded.—*Walt. Car. p.* 254; *Michx.! fl. l. c.; Willd.! l. c.; Pursh, l. c.; Michx. f. sylv.* 2. *t.* 80; *Ell. l. c.; DC. l. c.* G. Caroliniensis, *Lam. dict.* 2. *p.* 461. G. triacantha, *Gærtn. fr. t.* 146.

In swamps, S. Carolina! and Florida to Louisiana! and Texas! Also in Illinois, ex *F. A. Michaux.* July.—A small tree; the wood of little value. Legumes 1½–2 inches in length, and an inch in width, on a long stipe.—*Water-Locust.*

SUBORDER II. MIMOSEÆ. *R. Br.*

Sepals and petals valvate in æstivation, regular; the latter hypogynous, distinct or more or less united. Stamens as many as the petals or very numerous (5–200), hypogynous or inserted into the base of the corolla. Embryo straight.—Leaves abruptly pinnate or bipinnate. Flowers most frequently polygamous.

60. ALGAROBIA. *DC.* (§ of Prosopis); *Benth. pl. Hartw. p.* 13.

Flowers polygamous. Calyx 5-toothed. Petals 5, distinct, usually villous inside or at the extremity. Stamens 10, distinct: anthers not tipped with a gland. Ovary villous: style filiform, arcuate: stigma truncate. Legume continuous, compressed, linear, pulpy within, often torulose, or somewhat intercepted between the seeds, indehiscent, many-seeded.—Shrubs or trees, usually with axillary spines above the stipules. Leaves often fascicled, bipinnate; the pinnæ 1–4 pairs; the leaflets numerous. Spikes elongated, 1–3 together in the axils of the leaves, or from very short branches. Flowers greenish or yellowish.

1. *A. glandulosa:* spines elongated, often geminate; leaves glabrous; pinnæ a single pair, glandular at their origin; leaflets 7–15 pairs, rather distant, linear, elongated, coriaceous, reticulated, often somewhat falcate; spikes solitary or geminate, slender, shorter than the leaves.—Prosopis glandulosa, *Torr.! in ann. lyc. New York*, 2. *p.* 192, *t.* 2.

On the Canadian River, *Dr. James!* Texas, *Drummond!*—A small shrub, often decumbent, glabrous. Spines straight, an inch or more in length. Stipules minute. Common petioles terminated by a spinular point: a small gland between the (somewhat glandular) bases of the pinnæ. Leaflets ½–1 inch or more in length, obtuse, mucronulate. Legume about 6 inches long, straight, or a little curved, slightly compressed, filled with pulp.—The pods were used for food by Major Long's party.

61. MIMOSA. *Adans.; Gærtn. fr. t.* 344; *Willd. spec. p.* 1028.

Flowers polygamous (perfect and staminate). Calyx usually minute, somewhat urceolate, 4–5-toothed or nearly entire. Petals united into an infundibuliform or turbinate-campanulate 4–5-cleft corolla. Stamens equal in number with the petals, or twice or thrice as many (4–15), inserted into the base of the corolla or on the stalk of the ovary, much exserted, distinct or slightly monadelphous at the base. Legume much compressed, composed of one or more dry 1-seeded joints, which are at length separable and dehiscent, leaving a persistent entire border or replum.—Herbaceous, or mostly shrubby plants or trees, with bipinnate or conjugate-digitate leaves, which are often sensitive to the touch, frequently prickly. Stipules often striate. Flowers rose-color or white, in spherical or oval heads: peduncles axillary.

1. *M. strigillosa:* nearly unarmed, herbaceous; stems prostrate, diffuse;

the young branches, petioles, and peduncles very strigose; stipules ovate, striate, persistent; pinnæ about 5 pairs; leaflets 10–14 pairs, oblong-linear, nearly glabrous; peduncles very long, solitary; heads oblong when old; legumes broad, very hispid, 2–3-jointed, the lower margin sinnate, or often by abortion 1-jointed.

Banks of streams, &c. Tampa Bay, also in East Florida, *Dr. Leavenworth!* Banks of the Mississippi, Louisiana, *Dr. Carpenter! Dr. Hale!* Arkansas, *Dr. Leavenworth!* Texas, *Drummond!* (2nd Coll. 157, 158, 159.) July–Aug.—Stems extensively procumbent, occasionally armed with a very few short recurved prickles: no prickles at the base of the petioles: the branches, petioles &c., and sometimes the lower surface of the leaves, very densely strigose with long whitish scaly hairs; when old, glabrous or sparsely strigose. Leaflets obtuse, scarcely mucronate, inæquilateral, slightly falcate. Peduncles 5–6 or sometimes 10 inches long. Heads at first globose; the flowers rose-color. Petals, especially when rather old, minutely muricate towards the summit externally. Legumes when of three joints oblong and rather indistinctly jointed, when single-jointed ovate, oblique.—Allied apparently to M. humilis, *H. B. & K.*

‡ *Doubtful Species.*

2. *M. geminata* (DC.): stems diffuse and, with the petioles, aculeate; leaves bipinnate, the pinnæ 2-pairs, the leaflets 15–20 pairs; heads axillary, geminate. *DC. prodr.* 2. *p.* 426.

Western coast of North America, *Mocino* (*ic. ined.*) Head like that of M. pudica. Fruit unknown. *DC.*—There is probably some mistake concerning the locality of this plant. We know of no Mimosaceous plant indigenous to the Pacific coast within the limits of this work.

62. SCHRANKIA. *Willd. spec.* 4. *p.* 1041; *DC. prodr.* 2. *p.* 443.

Flowers polygamous (perfect and staminate). Calyx urceolate, minute, 5-toothed. Petals united in an infundibuliform 5-cleft corolla. Stamens 8–10, or rarely 12, distinct or cohering at the base. Legume muricate-echinate, dry, 1-celled, somewhat 4-sided, 4-valved by the separation of a large replum from the (thinner and smaller valves,) many-seeded.—Perennial prickly herbs, with bipinnate sensitive leaves. Stems procumbent, or ascending. Flowers (rose-color or purplish) in spherical heads: peduncles axillary, solitary or in pairs.

1. *S. uncinata* (Willd.): stem 5–8-grooved or angled: pinnæ 6 pairs; leaflets numerous, elliptical, reticulated with elevated veins beneath; heads mostly solitary, on peduncles mostly shorter than the leaves; legumes oblong-linear, with a short acuminate point, very densely echinate, as long as or often shorter than the peduncle; seeds elliptical.—*Willd.! spec.* 4. *p.* 1043; *Pursh, fl.* 1. *p.* 305; *DC. l. c.?* Mimosa Intsia, *Walt. Car. p.* 252. M. horridula, *Michx.! fl.* 2. *p.* 254; *Vent. choix. t.* 28.

Dry sandy soil, Virginia to Florida! Missouri! Louisiana! Arkansas! and Texas! May–July.—Stem (2–4 feet long) petioles, and peduncles thickly armed with strong uncinate prickles. Heads of flowers mostly rather large; the peduncles sometimes 2–3 inches long. Legumes about 2 inches in length, teretish, 4–7 usually ripening in each head.

2. *S. angustata:* stem 5–8-grooved or angled; pinnæ 4–6 pairs; leaflets

numerous, linear-elliptical, obscurely veined; heads solitary or in pairs, on short peduncles; legumes linear, long and slender, subulate-attenuate at the apex, armed with rather scattered prickles, 3–4 times the length of the peduncle; seeds linear-oblong.—S. uncinata, *Ell. sk.* 2. *p.* 158. (at least in part, ex spec.!)

With the preceding, S. Carolina! Georgia! Texas, *Drummond!*—A more slender species than S. uncinata, with smaller and weaker prickles, smaller heads, which are very frequently geminate, the leaflets not at all reticulated, the subulate and sparsely armed pods about 4 inches long, very slender, the peduncle usually about an inch in length.—Dr. Pickering seems first to have distinguished these two species, having labelled specimens of the preceding, in the herbarium of the Academy of Natural Sciences, S. reticulata; but a reference to Willdenow's work clearly shows that S. uncinata was wholly founded on this plant: that author notices the reticulated leaflets, and describes the peduncles as very long, and the fruit densely muricate. De Candolle has probably confounded the two species, since he states the legumes to be longer than the peduncles. Perhaps our S. angustata is the same with S. distachya, *DC.* of New Spain, which is founded on a drawing by Moçino.

63. DARLINGTONIA. *DC. in ann. sci. nat.* 1825, *& mem. Leg. t.* 66.

Flowers perfect. Calyx campanulate, 5-toothed. Petals 5, distinct. Stamens 5, distinct: style filiform: stigma minute, infundibuliform. Legume lanceolate, dry, compressed, membranaceo-coriaceous, 2-valved, 4–6-seeded. Seeds obovate-oval, compressed, with a very slender funiculus.—A perennial nearly glabrous unarmed herb. Stipules setiform. Leaves bipinnate; the pinnæ and leaflets numerous. Flowers white, in axillary pedunculate heads; the legumes capitate or crowded.

D. brachyloba (DC. l. c.)

α. *Illinoensis:* pinnæ 6–11 pairs, with a gland between the lowest pair only; stems somewhat diffuse; legumes slightly falcate.—D. brachyloba, *DC.! l. c. & prodr.* 2. *p.* 443. Mimosa Illinoensis, *Michaux! fl.* 2. *p.* 254. Acacia brachyloba, *Willd. spec.* 4. *p.* 1071.

β. *intermedia:* pinnæ 9–14 pairs, with a gland between the lowest pair only; stem stouter, more striate-angled; legumes as in var. γ.—D. intermedia, *Torr.! in ann. lyc. New York.* 2. *p.* 181.

γ. *glandulosa:* pinnæ 10–14 pairs, with a gland at the base of each; stem stout, striate-angled; legumes falcate, a little narrower, numerous in a dense head.—D. glandulosa, *DC.! l. c.* Mimosa glandulosa, *Michx.! l. c.* Acacia glandulosa, *Willd. l. c.*

Prairies and banks of rivers, α. Illinois! Kentucky & Louisiana! also Florida, *Dr. Chapman!* β. & γ. South Western States! to Arkansas! & Texas! June–Aug.—Stems 1–3 feet high. Leaflets very small, linear, somewhat mucronate. Legumes an inch or less in length, somewhat intercepted between the seeds, sometimes by abortion 1–2-seeded.—We find no essential difference between the more southern form (D. glandulosa, *DC.*) and D. brachyloba, except that the heads ripen a greater number of pods, which are a little narrower and more falcate than in the latter form, and even this character seems not to be constant.

64. DESMANTHUS. *Willd. spec.* 4. *p.* 1044; *Kunth, Mim. etc. p.* 115.

Flowers polygamous (perfect and neutral). Calyx campanulate, 5-toothed. Petals distinct and oblong-spatulate, or sometimes united, occasionally wanting in the neutral florets. Stamens 10 or sometimes 5; the filaments in the lower flowers of each spike sterile, sometimes antheriferous, either dilated or filiform. Legume continuous, dry, coriaceo-membranaceous, compressed, 2-valved, several-seeded.—Diffuse or procumbent unarmed herbs or suffrutescent plants. Leaves with stipules, bipinnate, often sensitive. Flowers in ovate, subglobose, or cylindrical heads or spikes (white, the filaments often yellow): peduncles axillary.

We are not well satisfied with the distinguishing characters of this and the nearly allied genera. The section Dichrostachys has already been removed by Arnott, and the genus perhaps requires still farther reduction. Our D. Jamesii is a true Desmanthus, with many-flowered heads, the filaments of the lower flowers sterile, and linear legumes: the leaves are also said to be very sensitive. The succeeding species of the section Desmanthea have the very few-flowered heads which seems to be a nearly universal character in that section; but the flowers are all perfect, or at most we sometimes find at the base of the heads one or two barren flowers with perfect stamens. The same thing may be sometimes observed in Darlingtonia brachyloba, with which these two species agree in habit, foliage, setiform stipules, and in almost every point except the narrow pods. The genus Darlingtonia should perhaps be extended to embrace these and some allied species.

§ 1. *Sterile filaments flat or somewhat petaloid: legumes oblong, 4–6-seeded, often stipitate: aquatic, prostrate.*—Neptunia, *Lour.*

1. *D. lacustris* (Willd.): herbaceous, floating; leaves destitute of glands; pinnæ 3 pairs; leaflets 20–30, alternate and opposite, linear, obtuse; heads ovate, many-flowered; peduncles 2–3-bracteate; flowers decandrous; legumes somewhat falcate, oblong, stipitate. *Kunth.*—*Willd. spec.* 4. *p.* 1044; *DC. prodr.* 2. *p.* 444; *Kunth. syn.* 4. *p.* 10. Mimosa lacustris, *Humb. & Bonpl. pl. æquin. t.* 16.

Texas, *Drummond!*—Stem terete, slender, elongated. Stipules scarious, ovate, acuminate. Leaflets somewhat lanceolate, broader at the base, thin, about 3-nerved, ciliate. Peduncles long and slender. Spikes loose. Flowers small, somewhat pedicelled: filaments of the lower ones antheriferous.—The specimens of Drummond are not in fruit, nor are the flowers in good state: we cannot doubt, however, that they are identical with the D. lacustris of New Grenada.

§ 2. *Sterile filaments filiform: legumes linear, many-seeded.*—Desmanthea, *DC.*

2. *D. Jamesii:* suffrutescent; stem decumbeut, angled; pinnæ 4–5 pairs, with a large concave gland between the lowest pair; leaflets 10–13 pairs, a little hairy on the margins; stipules minute, subulate; peduncles scarcely longer than the globose many-flowered heads, solitary or in pairs; flowers (white) decandrous; the filaments of the neutral ones filiform; legumes linear, elongated, somewhat arcuate, 15–18-seeded.—Acacia Cooleyi, *Eaton.*

Sources of the Canadian River, Arkansas, *Dr. James!*—Heads axillary or somewhat panicled at the summit of the branches. Legumes 3–4 inches long, not pointed.

3. *D. leptólobus:* herbaceous; stem ascending, angled; pinnæ about 10 pairs, with a small gland at the base of the lowest or two lower pairs; leaflets about 24 pairs, linear, slightly ciliate; stipules setiform; peduncles solitary, few-flowered, not bracteate, much shorter than the leaves; flowers pentan-

drous, all perfect (always?); legumes usually several from each head, narrowly linear, subulate-acuminate, slightly falcate, 6–8-seeded, somewhat intercepted between the seeds, thrice the length of the peduncles; seeds linear-oblong.

Texas, *Drummond!* Arkansas, *Dr. Leavenworth!*—Nearly glabrous. Stems apparently 2–3 feet high. Heads usually ripening 4–6 legumes, which are 2–3 inches long, and about a line in width. Seeds placed lengthwise in the pod.

4. *D. strictus* (Bertol.?): suffrutescent at the base; stems ascending, somewhat angled; leaves short; pinnæ 3–4 pairs, with an oval concave gland at the base of the lowest pair; leaflets 6–8 pairs, linear-oblong, ciliate; stipules setiform; peduncles solitary, not bracteate, nearly the length of the leaves, few-flowered; head subglobose; flowers nearly all perfect, decandrous; legumes linear, straight or somewhat falcate, acuminate, longer than the peduncles, about 8-seeded; seeds oval.—*DC. prodr.* 2. *p.* 445*?*

Texas, *Drummond!*—Stems 1–2 feet in length. Leaves small and short. Legumes 1–1½ inch long.—We refer our plant to Desmanthus strictus with some hesitation: the character we have given differs in some respects from that of De Candolle, and we have no authentic specimen for comparison.

5. *D. depressus* (Humb. & Bonpl.): stem suffruticose, prostrate; pinnæ 2 pairs; petiole with a gland at the apex (between the lower pinnæ); spikes few-flowered, capitate; flowers decandrous; legume narrowly linear. *DC.*—*Willd. spec.* 2. *p.* 1046; *Kunth, Mim. etc. p.* 115, *t.* 35; *DC. l. c.* Mimosa depressa, *Poir. suppl.* 1. *p.* 58.

Key West, *Mr. Bennett!* "Stem sometimes 4–5 feet in length, reclining on a Cactus."—Our specimen is imperfect.

6. *D. diffusus* (Willd.): stem suffruticose, prostrate; pinnæ 4–5 pairs; spikes few-flowered, capitate; flowers pentandrous; legume narrowly linear. *DC.*—*Willd. l. c.*: *DC. prodr.* 2. *p.* 444. Mimosa Pernambucana, *Linn.* M. Americana pigra siliquis longis, &c., *Pluk. alm. t.* 307, *f.* 3.

Key West, *Mr. Bennett!*—Our specimen is in fruit only, but in this state it accords with the figure of Plukenet. The legumes are 2 inches in length, not remarkably narrow, slightly acuminate, containing about 20 roundish seeds. There is a gland between the lowest pair of pinnæ.

65. ACACIA. *Necker; Willd. spec.* 4. *p.* 1049; *Kunth, Mim. etc. p.* 74.

Flowers polygamous (perfect and staminate). Calyx 4–5-toothed. Petals distinct or usually united below into a tubular-campanulate or infundibuliform 4–5-cleft corolla. Stamens various in number (8–200), distinct or united at the base, inserted into the base of the corolla or on the stalk of the ovary. Legume continuous, not jointed, 1-celled, dry, 2-valved, many-seeded.—Trees or often shrubs, very rarely herbaceous plants, unarmed, or sometimes prickly; the stipules often changed into spines; very various in foliage and habit. Leaves in the North American species bipinnate, with numerous leaflets. Flowers mostly yellow or white, in globular heads or elongated spikes.

* *Decandrous.*

1. *A. lutea* (Leavenworth): herbaceous, unarmed, prostrate, pubescent; branches elongated, angled; stipules lanceolate-subulate, deciduous; petioles destitute of glands; pinnæ 3-5 pairs; leaflets oblong-linear, obtuse, ciliate,

much crowded; peduncles axillary, solitary or geminate, longer than the leaves; flowers (yellow) in an oval or oblong head; calyx deeply 4-toothed; petals oval, acutish, a little united; stamens 10; legumes oblong, stipitate, very obtuse, flat, 3–8-seeded.—*Leavenworth! in Sill. jour.* 7. *p.* 61; *Hook. & Arn.! compan. to bot. mag.* 1. *p.* 24. A. nictitans, *Nutt.! mss.*

Prairies, Alabama, *Dr. Leavenworth!* Louisiana, *Drummond! &c.* Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!* Also in Florida?—Leaves sensitive: leaflets somewhat reticulated. Legumes about half an inch in breadth.

* * *Polyandrous: flowers in globose heads.*

2. *A. hirta* (Nutt.! mss.): "unarmed, herbaceous, sparsely hirsute; pinnæ 10–13 pairs; leaflets 24–30 pairs, very small, oblong-linear, obtusish, with a few scattered hairs; petioles without glands; stipules minute, deciduous; heads globose, pedunculate, geminate in the axils or somewhat paniculate at the extremity of the branches; stamens very numerous and slender; legumes flat, the margin sinuaed, by abortion few-seeded."

Plains of the Arkansas and Red Rivers, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* On the Canadian, *Dr. James!* Texas, *Drummond! Dr. Leavenworth!* Louisiana, *Dr. Hale!* May–June.—Plant 1–3 feet high, erect. Stem angled, very leafy. Flowers white. Legumes membranaceous, about 2 inches long, linear-oblong, the margin often sinuate, and here and there sometimes much constricted by the abortion of a portion of the seeds.

3. *A. Texensis:* unarmed, shrubby, nearly glabrous; pinnæ 5 pairs; leaflets about 20 pairs, linear-elliptical, obtuse at both ends, 1-nerved; petiole destitute of glands; stipules minute, deciduous; peduncles axillary, longer than the rather few-flowered globose heads, 1–3 together, simple or sometimes elongated, and bearing 3–4 lateral peduncles; flowers glabrous, on short pedicels; calyx very short, truncate; petals lanceolate-spatulate; stamens very numerous; fruit unknown.

Texas, *Drummond!*—Resembles somewhat A. arborea, *Benth. pl. Hartweg.* (vix *Willd.*); but is glabrous, except a few scattered short hairs on the rachis and margin of the leaflets, which are more obtuse, the heads of flowers smaller, the stamens more numerous, &c.

‡ *Introduced Species.*

4. *A. Julibrissin* (Willd.): unarmed, glabrous; pinnæ 8–12 pairs; leaflets 30 pairs, dimidiate-oblong, acute, slightly ciliate; a depressed orbicular gland at the base of the petiole; heads pedunculate, corymbosely disposed in a terminal panicle; stamens numerous; legumes flat, membranaceous, glabrous. *DC.*—*Willd. spec.* 4. *p.* 1065; *DC. prodr.* 2. *p.* 469.

In gardens and yards, Louisiana, *Prof. Carpenter!* cultivated and somewhat naturalized.—A small and very ornamental tree; a native of Persia. Flowers white; the stamens flesh-color or purplish above. The Persian name is said to mean "Silky-flower."

66. VACHELLIA. *W. & Arn. prodr. Ind. Or.* 1. *p.* 272.

Flowers polygamous (perfect and staminate). Calyx 5-toothed. Petals combined into a tubular 5–6-toothed corolla. Stamens very numerous, distinct. Legume cylindrical, turgid, scarcely dehiscent, filled with pulp; the seeds in a double row.—A small spreading tree, with stipular straight spines. Leaves bipinnate: pinnæ 2–8 pairs, with a gland below the lower pair. Flowers (yellow) in globular heads: peduncles axillary, solitary or 2–3 together.

1. *V. Farnesiana* (W. & Arn.): pinnæ 4–8 pairs; leaflets numerous, linear, nearly glabrous: peduncles 2–3 together.—Mimosa Farnesiana, *Linn.* Acacia Farnesiana, *Willd. spec.* 4. *p.* 1083; *DC. prodr.* 2. *p.* 461.
About New Orleans! Also near St. Marks, Florida, *Dr. Chapman!* Southern Florida, *Dr. Hasler!* doubtless introduced. This species is said, like Acacia Arabica, to exude a considerable quantity of gum.

Crafordia bracteata *Raf.* (*Specchio delle scienze, &c.* 1814; *DC. prodr.* 2. *p.* 552.) Under this name Mr. Rafinesque has described a papilionaceous plant, said to have been found on the banks of the Susquehannah River in Pennsylvania. It is described as a twining plant, with unequally pinnate leaves, white spicate flowers on a long peduncle, with scarious, subulate and persistent, ciliate bracts, and the legume about 2-seeded. The description does not at all accord with any known North American species, and, if it be correctly described, there is most probably some mistake respecting the native country of the plant in question.

ORDER XLIX. ROSACEÆ. *Juss.*

Sepals 5 (rarely 3–4), more or less united, commonly persistent; the odd one superior or next the axis. Petals 5, perigynous, regular, sometimes wanting. Stamens indefinite, rarely few, distinct, incurved in æstivation, inserted into or next the disk which lines the base of the calyx, just within the petals: anthers introrse or versatile. Ovaries solitary or several, distinct, and free from the calyx, or more or less coherent with its sides and with each other: ovules 1–2 or sometimes more: styles lateral or terminal, sometimes partly united: stigma various. Fruit either a drupe, a pome, achenia, or sometimes follicular. Seeds anatropous (rarely amphitropous or almost orthotropous), mostly destitute of albumen at least when ripe. Embryo straight: cotyledons flat or plano-convex.—Leaves alternate, stipulate, simple or compound. Inflorescence various. Flowers occasionally polygamous or diœcious.

SUBORDER I. CHRYSOBALANEÆ. *R. Br.*

Calyx free from the ovary or cohering on one side with its base. Petals and (the somewhat definite or indefinite) stamens more or less irregular in size or position. Ovary solitary, with 2 collateral erect ovules; the style arising from its base. Fruit a drupe.—Trees or shrubs (almost wholly tropical), with simple glandless leaves; the fruit often eatable.

1. CHRYSOBALANUS. *Linn.; Lam. ill. t.* 428*; DC. prodr.* 2. *p.* 525.

Calyx campanulate, 5-cleft, persistent; the segments nearly equal. Petals 5, unguiculate or sessile. Stamens about 20, in a single series; those next the style sometimes shorter and abortive. Ovary sessile, with 2 collateral ovules; the style arising from the base. Drupe 1-seeded, with a small quantity of pulp; the nucleus coriaceous, usually 5-sulcate.—Unarmed shrubs, with alternate mostly entire pinnately veined and reticulated leaves, and minute stipules. Flowers in axillary or terminal paniculate cymes.

1. *C. oblongifolius* (Michx.): flowers terminal; filaments united at the base, and, as well as the ovary, glabrous; petals roundish, sessile; fruit oblong, nearly dry; the nucleus not grooved; leaves oblong, obovate-oblong, or oblanceolate, sometimes emarginate, obscurely crenulate, usually glabrous; the upper surface reticulated and shining.—*Michx.! fl.* 1. *p.* 283; *Nutt. gen.* 1. *p.* 301; *Ell. sk.* 1. *p.* 539; *DC. l. c.*

Sandy pine woods, Georgia! Alabama! and Florida! May–June.—Trunk prostrate, slender; the branches 8–12 inches high. Leaves nearly sessile, sometimes (ex *Michaux & Nutt.*) tomentose beneath. Flowers small, white. Style compressed. Fruit nearly an inch in length.—In some cases we observe the vestiges of the style arising near the summit of the drupe. The endocarp is neither grooved, nor dehiscent.

2. *C. Icaco* (Linn.): flowers axillary; filaments and ovary hirsute; fruit (large) roundish, esculent; leaves obovate or roundish, emarginate, the upper surface shining and reticulated.—*Jacq. stirp. Amer. t.* 94; *Plum. Amer. t.* 158; *DC.! prodr.* 2. *p.* 525.

Southern Florida, *Dr. Hasler!*—The fruit is eaten in the West Indies, under the name of *Cocoa-Plum.*

SUBORDER II. AMYGDALEÆ. *Juss.*

Calyx free from the ovary, deciduous. Ovary solitary, with 2 collateral suspended ovules: styles terminal: stigma reniform or emarginate. Fruit a drupe. Seed mostly solitary, suspended in consequence of the cohesion of the funiculus with the side of the cavity of the ovary.—Trees or shrubs (confined to cold or temperate climates,) with simple leaves, which are commonly glandular towards the base. Stipules free. Fruit eatable: the bark yielding gum; and the leaves, bark, and kernel containing hydrocyanic acid.

2. PRUNUS. *Tourn.; Juss. gen. p.* 341*; DC. prodr.* 2. *p.* 532.

Calyx urceolate-hemispherical; the limb 5-parted, regular, deciduous. Petals much spreading. Stamens 15–30. Ovary glabrous, with 2 collateral pendulous ovules. Drupe ovate or oblong, fleshy, glabrous, usually covered with a bloom; the stone or nucleus more or less compressed, acute, smooth, the margins somewhat grooved.—Small trees or shrubs. Leaves serrate, convolute in vernation. Flowers usually appearing before the leaves, from lateral buds; the pedicels umbellate-fascicled.—*Plum.*

P. Americana is the only native species of this country which has a flat stone, grooved on both margins: the others are, in their fruit, somewhat intermediate between this genus and Cerasus; the stone being slightly compressed, and the glaucous bloom wanting, except in P. maritima; yet they are evidently *Plums* and not *Cherries*, and cannot with propriety be separated from this genus.

1. *P. Americana* (Marshall): branches somewhat thorny; leaves ovate-oblong, ovate, or somewhat obovate, conspicuously acuminate, sharply and often doubly serrate, strongly veined beneath, at length nearly glabrous; petioles often biglandular; umbels 2–5-flowered; drupe roundish-oval, (red and yellow when ripe) nearly destitute of bloom.—*Marsh. arbust. p.* 111; *Darlingt.! fl. Cest. p.* 287, *& in ann. lyc. New York,* 3. *p.* 87, *t.* 1. P. nigra, *Ait.! Kew.* (*ed.* 1.) 2. *p.* 165; *Bot. mag. t.* 1117; *Pursh! fl.* 1. *p.* 331; *Willd.! spec.* 2. *p.* 993. P. hyemalis, *Ell. sk.* 1. *p.* 542. Cerasus nigra, *Loisel.; Seringe in DC.! prodr.* 2. *p.* 538; *Hook. & Arn. in compan. to bot. mag.* 1. *p.* 24; *Hook.! fl. Bor.-Am.* 1. *p.* 167. P. triflora, *Raf. ann. nat.?*

β. mollis: leaves and pedicels pubescent, especially when young (drupe blackish when ripe).—P. mollis, *Torr.! fl.* 1. *p.* 470. P. hiemalis, *Michx.! fl.* 1. *p.* 284. Cerasus hyemalis, *Seringe! l. c.* C. Americana, *Hook. & Arn. l. c.*

Banks of streams and in hedges, Canada! (from the Saskatchawan!) and New England States! to Georgia and Louisiana! and Texas! Often cultivated. April–May.—Stem 8–15 feet high; the old branches rough and somewhat thorny. Leaves rather coarsely serrate. Drupe ½–1 inch in diameter, mostly reddish-orange when ripe, with a juicy yellow pulp and a thick tough skin.—*Red Plum. Yellow Plum.*—Few N. American plants are diffused through so many degrees of latitude as the present species. It is a true Plum and not a Cerasus. We have no Winter-plum; and this species, as Elliott and Dr. Darlington remark, ripens its fruit in July and August.

2. *P. Chicasa* (Michx.): branches thorny; leaves oblong-lanceolate or oblanceolate, acute, serrulate with inflexed glandular-pointed teeth, nearly glabrous; petioles mostly glandular; umbels 2–3-flowered, the short pedicels and calyx glabrous; drupe globose (red or yellowish red), nearly destitute of bloom.—*Michx.! fl.* 1. *p.* 284; *Ell. sk.* 1. *p.* 542; *Darlingt. l. c.* P. angustifolia, *Marsh. l. c.* Cerasus Chicasa, *DC.! l. c.; Hook.! in compan. to bot. mag.* 1. *p.* 24.

β.? normalis: pedicels and calyx more or less pubescent; leaves oval, tomentose-pubescent beneath, the serratures sometimes spreading.

South Western States! and Arkansas! perhaps only native of the country west of the Mississippi, from which, according to the traditions of the Indians, it was by them introduced into the Atlantic (Southern) States, where it is extensively naturalized: sometimes cultivated in the Northern States. April. *β.* Texas & Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*—The pubescent variety is perhaps the original wild stock of the well-known domesticated or naturalized *Chickasaw Plum.* Dr. Leavenworth remarks that it is only 3 or 4 feet high on the Prairies of Arkansas, and that the plums are small and rather astringent. The serratures of the leaves in Mr. Drummond's specimens (which want the flowers) are more sharp and salient, but Dr. Leavenworth's connect them with the cultivated form. Dr. Hale speaks of this species as a naturalized plant even in Western Louisiana. The fruit in cultivation is half an inch or more in diameter, with a thin skin, and a tender pulp, usually very pleasant; but, like all our species, very variable in quality. The flowers are much smaller than in P. Americana.

3. *P. glandulosa* (Hook.): low, somewhat thorny; branches pubescent and crooked; leaves (small) pubescent, oval, obtuse, often narrowed at the base, the serratures, as well as those of the calyx-segments, spreading and very glandular; umbels 1–2-flowered; ovary pubescent; style elongated; fruit unknown.—*Hook.! icon. t.* 288.

Texas, *Drummond!*—Shrub apparently a foot or less in height, with very crooked branches. Leaves scarcely an inch in length, rather smooth above. Flowers small.

4. *P. maritima* (Wang.): low; branches seldom thorny; leaves oval, ovate, or somewhat obovate, mostly somewhat acuminate, finely and sharply serrate; petioles mostly biglandular; umbels few-flowered; pedicels short, somewhat pubescent; fruit subglobose (red or purple), covered with a bloom.

α. leaves softly pubescent or tomentose beneath; fruit large, pleasant.—P. maritima, *Wang. Amer. p.* 103; *Willd.! enum.* 1. *p.* 519; *DC. l. c.* P. sphærocarpa, *Michx.! fl.* 1. *p.* 284. P. pubescens, *Pursh, fl.* 1. *p.* 331 (quoad syn.) P. littoralis, *Bigel.! fl. Bost. ed.* 2. *p.* 193. Cerasus pubescens, *Seringe, in DC. prodr.* 2. *p.* 538.

β. leaves when old mostly glabrous on both sides; fruit smaller, red or purplish.—P. pygmæa, *Willd. spec.* 2. *p.* 993, *& enum.* 1. *p.* 518. P. declinata, *Marsh, arbust.?* P. acuminata, *Michx.! l. c.* (charac. bad.) Cerasus pygmæa, *Loisel.*; *DC. l. c.*

Sandy sea-coast, Massachusetts! to New Jersey! β. Sandy barrens near the coast or with the preceding, Long Island! and New Jersey! to Virginia. Also Alabama, *Mr. Buckley!* April–May.—A low shrub with stout straggling branches. Leaves singly or doubly serrate, sometimes obtuse or with a slight acumination, frequently acute. Fruit often an inch in diameter and pleasant to the taste; and sometimes even on the same stem smaller, acerb and astringent.—The two forms here described may be traced into each other with great certainty; and Bigelow seems to have included both under his P. littoralis. The fruit of our β. is sometimes scarcely half an inch in diameter, and often pretty well-flavoured; but it is only on a warm sandy beach that it arrives to perfection. Pursh has evidently confounded this plant with P. Americana, as Elliott remarks, and to that the fragments in his herbarium seem, in part, to belong.—*Beach Plum. Sand Plum.*

‡ *Introduced Species.*

5. *P. spinosa* (Linn.): branches thorny; pedicels solitary; calyx campanulate; the lobes obtuse, longer than the tube; leaves obovate-elliptical or ovate, pubescent beneath, sharply and doubly toothed; drupe globose. *Seringe.*—*Vahl, fl. Dan. t.* 926; *Pursh, fl.* 1. *p.* 333; *DC. prodr.* 2. *p.* 532; *Hook. fl. Bor.-Am.* 1. *p.* 167.

In hedge-rows and cultivated grounds, introduced from Europe, and naturalized in some parts of Pennsylvania, according to Pursh, &c.—*Black Thorn. Sloe.*

P. Canadensis (Linn. spec. ed. 2.) must doubtless be suppressed. The specimen in the herbarium of Linnæus from which the character, as to the leaves, seems to have been drawn, has neither flowers nor fruit, and appears to belong to P. Americana, *Marsh.*, but that species has not racemose flowers. The specimen appended to this, named by the younger Linnæus "Americana," and referred by some person to "C. racemosa, foliis amygdalinis Americana," *Pluk. alm. t.* 158, *f.* 4, is

Cerasus serotina: but the figure of Plukenet (leaves only) belongs to something apparently different, and the specimen is not to be found in his herbarium. Another specimen, labelled by Linnæus "Canadensis, *Hort. Ups.*" is the P. pumila, *Linn. mant.*, to which the synonym of Duhamel is subsequently referred.

3. CERASUS. *Juss. gen. p.* 340; *DC. prodr.* 2. *p.* 535.

Flowers as in Prunus. Drupe globose, fleshy, destitute of bloom; the nucleus or stone mostly globose, smooth.—Trees or shrubs. Leaves conduplicate in vernation.—*Cherry.*

§ 1. *Flowers from lateral leafless buds, appearing before or with the leaves: pedicels umbellate-fascicled* (*as in* Prunus), *or corymbose.*—EUCERASUS.

Cerasophora and some species of Laurocerasus, *DC.*

1. *C. pumila* (Michx.): depressed-prostrate; leaves oblanceolate, obovate-lanceolate, or sometimes oval, acute or obtuse, slightly and sparsely serrate, glabrous, whitish beneath; umbels sessile, few-flowered; drupes ovoid.—*Michx.! fl.* 1. *p.* 286; *Seringe, in DC.! prodr.* 2. *p.* 537; *Hook. fl. Bor.-Am.* 1. *p.* 168. C. depressa, *Seringe, l. c.; Hook.! l. c.* Prunus pumila, *Linn.! mant. p.* 75 (excl. syn.?); *Willd.! spec.* 2. *p.* 990; *Pursh! fl.* 1. *p.* 538; *Torr.! fl.* 1. *p.* 470; *Guimp. Otto, & Hayne, holz. t.* 119. P. depressa, *Pursh, l. c.; Bigel.! fl. Bost. ed.* 2. *p.* 192. P. Susquehannæ, *Willd.! enum.* 1. *p.* 519. P. cuneata, *Raf. ann. nat. p.* 11.

Rocky or sandy shores of lakes and streams, Canada! as far north as the Saskatchawan! and Hudson's Bay! to Virginia. West to Missouri! and Arkansas! May.—Stems trailing; the ascending branches 3 or 4 to 20 inches high. Leaves variable in form. Fruit about the size of C. serotina, dark red, edible.—*Sand Cherry.*

2. *C. Pennsylvanica* (Lois.?): leaves oval or oblong-lanceolate, acuminate, membranaceous, finely serrate, the teeth mostly glandular, glabrous and shining when old, mostly biglandular at the base; umbels somewhat pedunculate and corymbose, many-flowered; the pedicels long and slender; drupe small, ovoid-subglobose.—*Seringe, in DC. l. c.* (quoad syn.); *Hook.! fl. Bor.-Am.* 1. *p.* 168. C. borealis, *Michx.! fl.* 1. *p.* 286; *Michx. f. sylv.* 2. *p.* 212, *t.* 90; *Seringe! l. c.* Prunus Pennsylvanica, *Linn.! suppl. p.* 252; *Ait.! Kew.* (*ed.* 1.) 2. *p.* 165; *Willd.! spec.* 2. *p.* 992; *Torr.! fl. l. c.* P. lanceolata, *Willd.! arb. t.* 3, *f.* 3. P. borealis, *Pursh, l. c.; Bigel. l. c.*

Saskatchawan! and Newfoundland to Virginia! North Western States! to the northern part of the Rocky Mountains. April–May.—A small tree, with reddish bark, marked with white dots, and regular branches. Leaves when fully grown 2–5 inches long; the margins very glandular. Fruit small, red, edible, but austere.—The fruit of this species is said by Pursh to be called *Choke-cherries:* but this name is ordinarily applied to a different species; and the present is called *Wild Red Cherry* or *Bird Cherry.*

3. *C. umbellata* (Ell. under Prunus): umbels terminal, many-flowered; leaves lanceolate, slightly acuminate, serrulate, glabrous, with 2 glands at the base; calyx pubescent. *Ell. sk.* 1. *p.* 541.

"In very dry sandy soils. March. (Ripens its fruit in July and August.)—A small tree with expanding branches, forming a compact round head. . . Leaves short, generally with a slight acumination. Flowers in fascicles, terminating the rigid lateral branches. Peduncles about an inch long. . . Fruit small, spherical, red (pleasantly acid, and is employed in preserves) Its flowers always expand and fall before the leaves unfold." *Elliott.*

—This species is wholly unknown to us. Elliott compares it with C. Pennsylvanica, whence we suppose it to be a Cerasus.

4. *C. emarginata* (Dougl.): leaves oval or obovate, serrulate, obtuse and often emarginate, nearly glabrous, biglandular at the base; corymbs few-flowered, glabrous; segments of the calyx ovate, obtuse, reflexed; drupes globose.—*Dougl.! in Hook. l. c.*

Upper part of the Oregon River, *Douglas! Nuttall!*—Shrub 4–10 feet high. Fruit somewhat resembling the Garden Cherry (*Nutt.*), but bitter and astringent.

5. *C. mollis* (Dougl.): leaves oblong or obovate-oblong, mostly obtuse, tomentose-pubescent beneath, serrulate; corymbs somewhat racemed, 5–6-flowered, tomentose; segments of the calyx very obtuse, reflexed, shorter than the pubescent tube; drupes ovoid.—*Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 169.

Oregon, common, *Menzies! Douglas! Mr. Tolmie! Nuttall!*—Tree 15–25 feet high, with brownish or purplish branches; the younger ones downy.

§ 2. *Flowers in racemes terminating leafy branches, appearing after the evolution of the leaves: leaves deciduous.*—PADUS.

6. *C. Virginiana* (DC.): leaves broadly oval or somewhat obovate, with a short abrupt acumination, often subcordate at the base, very sharply and often doubly serrate with subulate teeth, mostly hairy in the axils of the veins beneath; petioles with 2 or more glands; racemes short, erect or spreading; petals orbicular; drupes subglobose, dark red.—*Seringe, in DC.! prodr.* 2. *p.* 539 (excl. syn. *Michx.*); *Spach! suite Buff.* C. densiflora & fimbriata, *Spach! l. c.* C. serotina, *Lois.? l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 169. C. obovata, *Beck. bot. p.* 97. Prunus Virginiana, *Linn.! spec.* 1. *p.* 473 (excl. syn.); *Willd.! spec.* 2. *p.* 986, *& arb. t.* 5, *f.* 1; *Guimp. Otto, & Hayne, holz. t.* 36. P. rubra, *Ait. Kew.* (*ed.* 1.) 2. *p.* 163. P. serotina, *Pursh! l. c.; Torr.! fl.* 1. *p.* 468. P. obovata, *Bigel.! fl. Bost. ed.* 2. *p.* 192. P. hirsutus, *Ell. sk.* 1. *p.* 541?

β. low; flowers smaller.—P. nana, *Du Roi; Pott!* (v. sp. in *herb. Willd.*) Cerasus micrantha, *Spach! l. c.*

Canada! and Newfoundland, Hudson's Bay, and near Great Slave Lake, lat. 62° (*Richardson!*) and Northern States! to Louisiana! April–May.—A small tree or low shrub, with grayish bark. Leaves membranaceous, 2–3 inches long when full-grown. Fruit about as large as in C. serotina, dark red when fully ripe, edible but very astringent.—*Choke-Cherry.*—This and the succeeding species are perfectly distinct, and are well characterized by Ehrhart, who first distinguished them. The confusion respecting them has resulted from an error of some of the older authors, and the subsequent transposition of the specific names. The Prunus Virginiana of Linnæus was founded on the present species (the Choke-Cherry), as appears from his description and herbarium: but the synonym adduced from Gronovius relates to the succeeding species, that of Plukenet (omitted in ed. 2,) to Itea Virginica! and that of Catesby (which was afterwards erased by Linnæus in his own copy of the Species Plantarum) to Cerasus Caroliniana. Michaux having taken the following for the Linnæan species, the present plant came to be erroneously called P. serotina by American botanists, applying to it, as if to increase the confusion, the character of Willdenow's P. serotina. It is this species which is so nearly allied to C. Padus of Europe.

7. *C. serotina* (DC.): leaves (rather coriaceous) oval, oblong, or lanceolate-

oblong, acuminate, glabrous, or bearded along the midrib beneath, smooth and shining above, finely serrate with appressed or incurved callous teeth; petioles (or base of the leaf) mostly with 2 or more glands; racemes elongated, spreading; petals broadly obovate; drupes globose, purplish-black.—*Lois.? l. c.; Seringe! in DC. l. c.; Spach! l. c.* C. sylvestris, &c. *Gronov.! Virg. p.* 75. C. Virginiana, *Michx.! fl.* 1. *p.* 283*; Michx. f. sylv.* 2. *p.* 204, *t.* 88*; Hook. l. c.* (excl. syn.)*; Darlingt. fl. Cest. p.* 289. Prunus serotina, *Ehrh. beitr.* 3. *p.* 20*; Willd.! arb. t.* 5, *f.* 2, *& spec.* 2. *p.* 986*; Guimp. Otto, & Hayne, holz. t.* 37*;* not of *Pursh, Torr. &c.* P. Virginiana, *Mill. dict.; Du Roi, harbk.* 2. *p.* 191*; Wang. Amer. t.* 14, *f.* 3*; Ell. sk. l. c.; Torr.! fl.* 1. *p.* 467*;* not of *Linn.*, except as to syn. *Gronov.* P. cartilaginea, *Lehm.! ind. sem. Hamb.* 1833.

In woods, Canada! to Florida and Western States! May.—Tree 30-80 feet high, with spreading branches; the wood hard and close-grained, valuable to cabinet-makers. Leaves 2–4 inches long. Racemes 2–5 inches in length, at length nodding. Fruit 2–3 lines in diameter, edible, but slightly bitter to the taste.—This is the C. Virginiana of Hooker, so far as relates to the character and a part of the synonomy; but the subjoined remarks from X Richardson belong to the Choke-Cherry, as he indeed suggests. In the Northern States, this species ripens its fruit in August and September, about a month later than C. Virginiana.—*Wild Cherry. Black Cherry.*

8. *C. demissa* (Nutt.! mss.): "shrubby; leaves ovate or oval, acute, sharply serrulate with straight teeth, often emarginate at the base, more or less pubescent beneath; racemes erect [or nodding], longer than the leaves; calyx hemispherical; the lobes short and obtuse, glandularly ciliate; petals roundish; drupes red."

Plains of the Oregon towards the sea, and at the mouth of the Wahlamet, *Nuttall!* Oregon, *Mr. Tolmie!*—This is apparently a quite distinct species, growing to the height of 5–6 feet, according to Nuttall, with astringent fruit. The petiole is mostly biglandular, the pedicels about the length of the flowers. To this perhaps belong the specimens of "C. serotina," collected by Douglas in the vallies west of the Rocky Mountains, although it is not improbable that the true C. Virginiana has this range in the north.

§ 3. *Flowers in racemes, from the axils of the persistent leaves of the former season.*—LAUROCERASUS, Tourn.; DC. (excl. § 1.)

A truly natural section, when properly characterized, as above.

9. *C. Caroliniana* (Michx.): leaves on short petioles, oblong-lanceolate, acuminate, mucronate, entire or sometimes spinulose-serrate, coriaceous, veinless, smooth and shining above; racemes dense, shorter than the leaves; drupes black, juiceless, persistent.—*Michx.! fl.* 1. *p.* 285*; DC.! l. c.* Prunus Caroliniana, *Ait. Kew.* (*ed.* 1.) 2. *p.* 540*; Ell. sk.* 1. *p.* 540. P. Lusitanica, *Walt. Car. p.* 167. Bumelia serrata, *Pursh, fl.* 1. *p.* 155, ex *Nutt.*

River-banks, S. Carolina! to Florida! Louisiana! and Arkansas! March–April.—Tree 30–50 feet high. Leaves destitute of glands, almost veinless. Petals small. Stamens about 15.—The leaves, according to Elliott, are very poisonous, frequently destroying cattle that are tempted to browse freely on them in the spring of the year.

10. *C. ilicifolius* (Nutt.! mss.): leaves on short petioles, roundish-cordate or broadly oval, spinosely-toothed, veiny, smooth and shining above, coriaceous; racemes dense, about as long as the leaves; drupes black, oval, acuminate.—*Hook. & Arn.! bot. Beechey, suppl. p.* 340, *t.* 83.

X Reisler, in litt. [illegible]

earlier than [illegible]

St. Barbara, California, *Douglas! Nuttall!* On the mountains.—"A small much branched tree, with rather large bitter and astringent fruit: the leaves sometimes undulate and very rigid, and sometimes flat." *Nutt.*

C. Capollin (DC.), which is the same with C. Capuli according to Schlechtendal, is cultivated at St. Barbara, California, according to Nuttall, who sends us specimens under the name of C. longifolius, *Nutt. mss.*, which wholly agree with those of Schlechtendal and of Bentham (*Pl. Hartweg.*) It belongs to the section Padus, not to Laurocerasus, and is allied to C. serotina.

C. Padus, *C. semperflorens*, *C. persiciflora*, and *Prunus cerasifera*, have been considered natives of North America, doubtless mistakenly.

SUBORDER III. ROSACEÆ Proper.

Roseæ, Sanguisorbeæ, Potentilleæ, & Spiræeæ, *Juss.*

Calyx (5- or sometimes 3–4-cleft, and often with as many accessary segments or bracteoles) free from the ovaries. Stamens occasionally few in number. Ovaries solitary or several, with 1–2 or more suspended or ascending ovules, distinct or very rarely combined, sometimes included in the persistent calyx-tube: styles terminal or lateral: stigma simple or slightly dilated. Fruit either follicular and then 1–10-seeded, or 1-seeded achenia.—Herbs, shrubs, or very rarely trees (with astringent properties), with simple or compound leaves.

TRIBE I. SPIRÆEÆ. *Juss.*

Calyx campanulate, imbricate, or sometimes valvate in æstivation. Carpels mostly 5 (rarely more, or even reduced to 1 or 2), verticillate, follicular or 2-valved in fruit: styles terminal. Seeds 1–8 or 10 in each carpel, pendulous or ascending.—Shrubs or small trees, rarely herbs.

Our Nuttallia forms an interesting transition from Amgydaleæ to this tribe (supposing it to comprise Kageneckia, &c.) where, on the whole, we prefer to place it.

4. NUTTALLIA. *Torr. & Gr. in Hook. & Arn. bot. Beechey, suppl. p.* 336, *t.* 82, not of *Dick.*

Flowers diœcious by abortion. Calyx campanulate, 5-cleft; the lobes imbricate in æstivation, spreading, somewhat petaloid, deciduous. Petals 5, oblong-oval, slightly unguiculate. Stamens 15, in a double series, of which 10 are inserted, with the petals, into the margin of the coherent disk which lines the tube of the calyx, and 5 (opposite the sepals) on its surface at some distance below; those of the fertile flowers similar, but all abortive: filaments short, these of the lower series deflexed: anthers roundish, emarginate at both ends. Ovaries 5, distinct, erect, obliquely obovate, glabrous (wanting in the sterile flowers): style somewhat lateral, filiform, articulated at the base, at length deciduous: stigma dilated: ovules 2, collateral, suspended. Fruit (by abortion) of 1–4 dry, coriaceous, indehiscent ? obliquely obovate-oblong, 1-seeded carpels; "the exocarp a blackish-brown scarcely succulent skin, furnished with a bloom". (*Nutt.*) Seed obovate, anatropous: albumen none. Cotyledons broadly obovate, compressed.—A small tree, "exhaling a faint odor of bitter almonds," with obovate-oblong, entire, membranaceous leaves. Stipules none. Flowers (white) in racemes: pedicels bracteate, and usually 1–2-bracteolate; the bracts and bracteoles linear, elongated, persistent. ([illegible] volute! [illegible])

N. cerasiformis (Torr. & Gr. l. c.)

Oregon, along the margins of pine woods, &c., *Douglas! Dr. Scouler! Dr. Gairdner! Mr. Tolmie! Nuttall!* also in the back part of N. California, *Douglas!* and near St. Barbara, *Nuttall!*—Tree with the habit of Amelanchier Canadensis, and about the same size, with smooth brownish branches. Leaves 3–4 inches in length, apiculate-mucronate, tapering towards the base, more or less pubescent beneath, on short distinct petioles. Racemes appearing with the leaves, each from the same bud with a branchlet, usually side by side, drooping, 7–12-flowered: pedicels elongated; one or both the bracteoles often arising from the base of the calyx. The fruit, according to Mr. Nuttall, is greedily eaten by birds, although bitter to the taste, and with the heavy odor of the bitter almond.—This remarkable genus has been known to us for several years, through flowering specimens communicated by Dr. Scouler; and on Mr. Nuttall's return with fine fruiting specimens, he acceded to our wish that it should bear the name of Nuttallia; a name which, as Sir Wm. Hooker justly remarks, "could not be attached to any plant with greater propriety, than to one inhabiting a district of country where that gentleman has so eminently signalized himself by his recent laborious researches and discoveries." The Nuttallia of Dick, Barton, &c., is in this work reunited to Malva. The affinity of the genus seems to be with Kageneckia and its allies. The scarcely drupaceous carpels are perhaps ultimately dehiscent. Pet. [illegible] [illegible] [illegible] [illegible] [illegible]

5. SPIRÆA. *Linn.; Gærtn. fr. t.* 69; *DC. prodr.* 2. *p.* 541.

Calyx 5-cleft, persistent. Petals 5, obovate or roundish, equal. Stamens 10–50, inserted with the petals into the thin disk which lines the calyx-tube. Carpels 3–12, distinct, or rarely united at the base, often somewhat stipitate, follicular, sometimes 2-valved, 1–10-seeded: styles terminal: stigmas obtuse or capitate.—Unarmed shrubs or perennial herbs. Leaves alternate, various. Flowers white or rose-color, sometimes by abortion diœcious.

§ 1. *Flowers perfect: disk wholly coherent to the tube of the calyx: carpels large, somewhat united at the base, inflated and divergent: one of the ovules pendulous, the others* (1–3) *ascending: seeds obovate; the testa firm, smooth and shining: shrubs, with somewhat lobed stipulate leaves, and simple umbelliform corymbs.*—PHYSOCARPOS, Camb.

1. *S. opulifolia* (Linn.): leaves roundish, often subcordate, 3-lobed, doubly serrate, petioled, nearly glabrous; corymbs pedunculate, umbel-like, somewhat hemispherical, many-flowered; pedicels filiform, glabrous or slightly pubescent; carpels 3–5, at length spreading and much larger than the calyx. —*Linn. spec.* 1. *p.* 489; *Michx.! fl.* 1. *p.* 293; *Ell. sk.* 1. *p.* 540; *Seringe*,

in DC.! prodr. 2. *p.* 542 (& β. tomentella); *Hook.! fl. Bor.-Am.* 1. *p.* 171; *Darlingt. fl. Cest. p.* 298.

β. *mollis*: leaves tomentose beneath with a stellate pubescence; the lobes often elongated, acute, and somewhat incised; pedicels and calyx tomentose.—*Hook.! l. c., & bot. Beechey, suppl. p.* 338. S. capitata, *Pursh, fl.* 1. *p.* 342. S. ribifolia, *Nutt.! mss.*

γ. *pauciflora*: leaves smaller, nearly glabrous; corymbs few-flowered; carpels 2–4, or sometimes solitary, tomentose.—*Hook. l. c.* S. monogyna, *Torr.! in ann. lyc. New York,* 2 *p.* 194. S. pauciflora, *Nutt.! mss.*

ε. *ferruginea* (Nutt.! mss.): leaves and branchlets tomentose throughout with a brownish stellate pubescence; carpels glabrous.

Banks of streams, Canada! (as far north as the Saskatchawan) to Georgia! and Missouri! β. Oregon! and California! γ. Rocky Mountains in about lat. 40°, *Dr. James!* Blue Mountains, Oregon Territory, *Nuttall!* and at Kettle Falls of the Oregon, *Douglas.* ε. Florida and Georgia, *Nuttall!* and Alabama, *Dr. Leavenworth,* ex *Nutt.* June.—Stem 3–5 feet high; the old bark loose and detaching itself. Petals white or tinged with purple, showy. Seeds very bitter.—*Nine-bark.*

§ 2. *Flowers perfect: disk free at the margin, mostly crenate or with glandular teeth or lobes: carpels distinct, not inflated: ovules mostly several, pendulous: seeds mostly with a loose membranous testa, attenuate at each end: shrubs with entire or serrate exstipulate leaves.*—EUSPIRÆA.

* *Flowers in fastigiate compound corymbs: ovules* 5–8.

2. *S. betulæfolia* (Pallas): leaves broadly oval, or ovate, glabrous, on short petioles, serrate, often slightly incised, the lower ones sometimes nearly entire; corymbs compound, fastigiate, many-flowered, often leafy; segments of the calyx as long as the tube; carpels 5, glabrous.—*Pall. fl. Ross. t.* 16; *Seringe, in DC. prodr.* 2. *p.* 554; *Hook.! fl. Bor.-Am.* 1. *p.* 172. S. chamædrifolia, *Pursh; Cham. & Schlecht! in Linnæa,* 2. *p.* 2 (ex auct. *l. c.* 6. *p.* 589); *Hook. l. c.*

β. leaves elliptical (small), glabrous or a little pubescent; ovaries (always?) pubescent.—S. chamædrifolia β. *Hook. & Arn.! bot. Beechey, p.* 123. S. chamædrifolia, *Pall. l. c.?* not of *Linn.!*

N. W. Coast! to the Blue Mountains of Oregon! and the Rocky Mountains in lat 52°–54°. β. Kotzebue's Sound, *Capt. Beechey!*—Stem 8–20 inches high; the branches erect, reddish or purplish, glabrous. Leaves 1–2 inches long, often acute at the base, serrate throughout or sometimes entire towards the base. Flowers white, much crowded on the branches of the broad and flat corymb.—The S. densiflora, *Nutt.! mss.* seems only to differ from the ordinary forms of this rather variable but well-marked species, in having pale rose-colored petals. S. chamædrifolia, *Linn.* is not a North American plant. Small specimens of this species have been mistaken for it, probably on account of their agreement with the figure of Pallas under this name, but the original plant of Gmelin is wholly different, and belongs to the section Chamædryon, where Seringe has placed it, having the simple umbel-like corymbs of S. hypericifolia, &c. We have not at hand the figure in the Botanical Register, but conclude from Hooker's remark that Dr. Lindley has taken the same view of the species.

3. *S. corymbosa* (Raf.): minutely pubescent or glabrous; leaves oval or ovate, on short petioles, whitish beneath, entire towards the base, unequally and often doubly serrate towards the apex; corymbs large, pedunculate, several times compound, fastigiate, many-flowered, often leafy; segments

of the calyx broad, shorter than the tube; carpels 3–5, glabrous.—*Raf.! prec. decouv.*, *& in Desv. jour. bot.* 1814, *p.* 168; *Torr.! fl.* 1. *p.* 482; *Seringe*, *l. c.*; not of *Muhl.* S. chamædrifolia, *Pursh*, *l. c.*, not of *Linn.* S. ceanothifolia, *Hornem. hort. Hafn.?* S. cratægifolia, *Link. enum.?* S. betulæfolia, *Wats. dendrol. t.* 67.

Canada? Mountains of Pennsylvania! Virginia! Georgia! and Kentucky! May–June.—Stem 1–2 feet high, the branches reddish. Leaves 2–3 inches long, sometimes incisely toothed above, rarely almost entire. Corymb 3–4 inches broad, 4–5 times compound; the flowers (white or rose-color) crowded on the ultimate divisions.—Perhaps not sufficiently distinct from S. betulæfolia, from which it chiefly differs in its larger leaves, more compound pedunculate corymbs, and shorter calyx-segments; but Mr. Nuttall's specimen of S. densiflora, from Oregon, approaches it; and a specimen from Hooker, collected in Franklin's second over-land journey, is certainly our plant.

* * *Flowers in dense panicles: calyx-segments triangular, reflexed: ovules* 9–11.

4. *S. salicifolia* (Linn.): nearly glabrous; leaves lanceolate or obovate-oblong, simply or doubly serrate; racemes in a crowded panicle; carpels 5, glabrous.—*Linn. l. c.*; *Pall. fl. Ross. t.* 21; *Willd.! spec.* 2. *p.* 1055.

β. *lanceolata:* leaves lanceolate, often entire towards the base; panicle small, simple, loose; flowers white.

γ. *paniculata* (Ait.): leaves ovate-oblong; branches of the panicle divaricate or spreading; flowers white.—S. alba, *Du Roi*; *Ehrh.*; *Wats. dendrol. t.* 133.

δ. *latifolia* (Ait.): leaves obovate or obovate-oblong; panicle compound, loose; flowers white or pale rose-color.—S. salicifolia, *Michx.! l. c.*; *Torr.! fl.* 1. *p.* 481; *Darlingt. l. c.* S. alba, *Bigel. fl. Bost. ed.* 2. *p.* 197. S. carpinifolia, *Willd.! enum.* 1. *p.* 540.

Swampy thickets and along streams, Newfoundland! and the Saskatchawan! to Georgia! common. June–July.—Stem 2–5 feet high; the branches usually purplish. Leaves variable in shape, pale or glaucous beneath.—*Queen-of-the-meadow. Meadow-sweet.*

5. *S. tomentosa* (Linn.): branches, panicles, and lower surface of the leaves lanuginous-tomentose and rusty-colored; leaves ovate or oblong, on very short petioles, crowded, unequally serrate; racemes short, dense, very numerous, aggregated into a close virgate panicle; carpels 5, tomentose, spreading.—*Linn.! l. c. Michx.! l. c.*; *Willd.! spec.* 2. *p.* 1056; *Seringe, in DC.! l. c.*; *Hook.! l. c.*

Low grounds, Canada! (from Lake Winipeg) to Georgia! & Kentucky. July.—Stems 2–3 feet high. Flowers small, flesh-colored or pale purple. Seeds subulate at each end.—*Hard-hack.*

6. *S. Douglasii* (Hook.): young branches, panicle, and lower surface of the leaves canescently tomentose; leaves oblong or elliptical, unequally serrate towards the apex; panicles densely-flowered, oblong, obtuse; flowers small; stamens twice the length of the petals; carpels 5, glabrous and shining.—*Hook.! fl. Bor.-Am.* 1. *p.* 172. [illegible]

Plains of the Oregon near the sea, and Straits of Da Fuca, *Douglas! Dr. Scouler! Nuttall!* July.—Nearly allied to S. tomentosa, but well distinguished by the characters indicated by Hooker: the tomentum is always white.

7. *S. Menziesii* (Hook.): upper branches, peduncles, and calyx slightly pubescent; leaves elliptical, coarsely and unequally serrate towards the

S. [illegible]

apex, glabrous, of the same color both sides; panicle dense, oblong, obtuse; flowers small; stamens twice the length of the (rose-color) corolla; carpels 5, glabrous. *Hook.! fl. Bor.-Am.* 1. *p.* 173.

Oregon, *Menzies! Nuttall!*—This species, as Mr. Nuttall remarks, seems more nearly allied to S. salicifolia than to S. Douglasii: indeed it does not obviously differ from some states of that species, except in the very dense and obtuse panicle.

* * * *Flowers in large and loose compound panicles: calyx deeply 5-cleft, spreading: disk wholly coherent, entire: ovules 2, collateral!*

8. S. *ariæfolia* (Smith): leaves broadly ovate, petioled, obtuse, pinnatifidly incised or somewhat lobed, dentate with mucronate teeth, almost glabrous above, canescently hairy or tomentose beneath; panicle large and loose, much branched, and, with the calyx, tomentose-pubescent; segments of the calyx acute, spreading; carpels 5, broad, compressed, margined, very hirsute.—*Smith! in Rees, cycl.; Seringe, in DC. l. c.; Lindl.! bot. reg. t.* 1365*; Hook.! fl. Bor.-Am.* 1. *p.* 173, *& bot. Beechey, suppl. p.* 338.

β. discolor: leaves much smaller, cuneiform at the base, the serratures scarcely mucronate, silvery-tomentose beneath.—S. discolor, *Pursh.! fl.* 1. *p.* 342*; Seringe, l. c.; Torr.! in ann. lyc. New York,* 2. *p.* 195. S. dumosa, *Nutt.! mss.*

N. W. Coast! Oregon! and California! (*Menzies! Douglas! Dr. Scouler! Nuttall!*) *β.* In the Rocky Mountains, *Dr. James! Nuttall!* and on the Kooskoosky River, *Lewis!* June–July.—The ordinary form is frequently somewhat arborescent, according to Nuttall, with a stout trunk, rising to the height of 12–14 feet. His S. dumosa is said to be a low shrub, confined to mountain regions. Douglas's Californian specimens are quite intermediate between the two, and probably came from the back country: the young leaves agree well with the description of Pursh.

§ 3. *Flowers perfect, sometimes tetramerous: disk obsolete: sepals reflexed: carpels distinct, straight or sometimes contorted: ovules about 2, one above the other, pendulous: stigmas capitate, usually very large: seeds . . . . : herbs with pinnately divided stipulate leaves: inflorescence paniculate-cymose.*—ULMARIA, Mœnch.

9. S. *lobata* (Murr.): leaves pinnately 3–5–7-foliolate, often with smaller stipulate leaflets interposed; lateral leaflets cuneiform at the base, palmately 3-parted or lobed; the terminal one 7–9 parted, very large; the lobes all serrate, mostly incised or toothed; stipules reniform, persistent; panicle very compound, cymosely branched; flowers large, deep rose-color; sepals reflexed; styles short; stigma very large; carpels 6–8, glabrous, straight.—*Murr. syst. p.* 472*: Jacq. hort. Vindob. t.* 88*; Michx.! fl.* 1. *p.* 294*; Willd.! spec.* 2. *p.* 1062*; Ell. l. c.; Seringe, in DC. prodr.* 2. *p.* 545. S. palmata, *Linn. suppl. p.* 262, not of *Thunb.*

Moist grounds and prairies, Pennsylvania! and Michigan! to S. Carolina! (towards the mountains) and Kentucky! June–July.—Stem 5–8 feet high, glabrous, striate, and angled. Upper cauline leaves short, 3-lobed. Flowers numerous, incompletely cymose.—The bruised leaves are said to exhale an odor similar to that of the *Wintergreen.*

10. S. *Kamstchatica* (Pallas): leaves simply palmate, the upper ones somewhat hastate or lanceolate; petioles appendiculate; flowers corymbose; sepals hairy, reflexed; carpels very hirsute, parallel; styles somewhat capi-

tate. *Seringe.—Pall. fl. Ross.* 1. *p.* 41, *t.* 94 & 48; *Willd. l. c.*; *DC. l. c.*; *Spreng. syst. p.* 503.

Aleutian Islands, ex *Sprengel.*

§ 4. *Flowers diœcious: disk entire, coherent: filaments very long: carpels distinct: ovules* 8–12, *pendulous: seeds with a loose membranous testa, attenuate at each end: branching herbs, with tripinnately divided exstipulate leaves: spikes filiform, very numerous, in a large compound panicle: pedicels reflexed in fruit.*—Aruncus, Seringe.

11. *S. Aruncus* (Linn.): leaves tripinnate, membranaceous; leaflets lanceolate-oblong, acuminate, the terminal ones ovate-lanceolate, sharply and incisely doubly serrate; flowers very numerous; carpels 3–5, very glabrous. —*Linn.! spec.* 1. *p.* 496; *Pall. fl. Ross.* 1. *t.* 6; *Michx.! fl.* 1. *p.* 294; *Ell. sk.* 1. *p.* 561; *Seringe! l. c.*; *Hook.! l. c.* S. acuminata, *Dougl.! mss.*; *Nutt.! mss.*

Pennsylvania! and on the Cattskill Mountains, New York! to Georgia! Kentucky! and Missouri! mostly in the mountains. Also in the Rocky Mountains! and Oregon! to Sitcha! on the N. W. Coast. June–July.—A tall branching herb; the panicle of slender spicate racemes large and compound. Flowers very small, white.—Both Nuttall and Douglas consider the western plant a distinct species; but our opinion coincides with that of Bongard and Hooker, who are unable to distinguish them. The variety with perfect flowers, first mentioned by Michaux, is probably Astilbe decandra (Tiarella biternata, *Vent.*), which in habit strikingly resembles this plant.—*Goat's-beard.*

§ 5. *Flowers perfect: disk wholly coherent with the tube of the calyx: filaments united at the base, shorter than the obovate petals: ovaries* 5 (4–6), *distinct, woolly along the inside: styles filiform, deciduous: stigma obtuse: ovules about* 6, *pendulous from near the summit of the ovary: seeds* 4, *attenuate at each end: stem nearly herbaceous, low: leaves exstipulate, palmately cleft: raceme or panicle short, crowded.*—Lutkea, Bongard. (Eriogynia, *Hook.*)

12. *S. pectinata:* stems cæspitose, creeping; branches short, erect, leafy; leaves rigid, much attenuated and linear at the base, twice or thrice 3-cleft; the lobes linear, acute; lower bracts similar to the leaves; raceme woolly (often compound), somewhat capitate, elongated in fruit—Saxifraga pectinata, *Pursh! fl.* 1. *p.* 312. Lutkea sibbaldioides, *Bong.! veg. Sitcha, in mem. acad. St. Petersb.* (*ser.* 6.) 2. *p.* 130, *t.* 2. Eriogynia pectinata, *Hook.! fl. Bor.-Am.* 1. *p.* 255, *t.* 88.

Behring's Straits, *Menzies!* Sitcha, *Bongard!* Norfolk Sound, *Eschscholtz!* Mount Ranier, *Mr. Tolmie!* "Height of Land" on the Rocky Mountains near the sources of the Oregon, *Drummond!*—This interesting plant cannot well be distinguished from Spiræa, unless that genus should be broken up into several, as has been proposed. Endlicher, we observe, has left it in Saxifragaceæ.

§ 6. *Flowers perfect: disk free above, nearly entire: filaments distinct, rather longer than the spatulate-oblong* (*minutely hairy*) *petals: ovaries* 3-5, *distinct: styles filiform, very hairy below: stigma simple: ovules* 2–3, *sus-*

pended: seeds 1–2: *stems very short, cæspitose, woody, imbricated with spatulate entire exstipulate leaves: scapes, or flowering stems, sparsely leafy: spike dense, cylindrical.*—PETROPHYTUM, Nutt. mss.

13. *S. cæspitosa* (Nutt.! mss.): "low, shrubby; leaves rosulate on the very short tufted branches, small, spatulate-oblong, entire, silky-villous; those of the scape scattered and much smaller; flowers white, in a dense spike; calyx silky-villous; the segments ovate, acute.

"On high shelving rocks in the Rocky Mountains, towards the sources of the Platte. July.—A singular dwarf alpine plant, with scarcely the habit of Spiræa. Leaves about one-third of an inch long. Scapes 3–5 inches high; the cylindrical spikes an inch or two in length, obtuse. Bracts as long as the flowers. Carpels linear, a little curved at the apex, dehiscent along the inside and 2-cleft. The taste of the plant scarcely perceptible." *Nuttall.*

S. hypericifolia (Linn.) was erroneously said by Linnæus to come from North America. The plant so called by Muhlenberg in his own herbarium is a variety of S. salicifolia, although we believe a specimen of the true plant, sent by Muhlenberg, exists in the herbarium of Willdenow, probably a cultivated plant. Pursh has committed some error in stating S. hypericifolia to grow in dry swamps of Canada and New York.

S. crenata (Linn.) must also be excluded from our flora.

S. sorbifolia (Linn.) is doubtless wrongly given by Pursh as a native of the North West Coast.

6. GILLENIA. *Mœnch, suppl. p.* 286; *Nutt. gen.* 1. *p.* 307.

Calyx tubular-campanulate, the orifice somewhat contracted, 5-toothed; the teeth glandular-ciliate, erect. Petals 5, linear-lanceolate, very long, somewhat unequal, inserted in the orifice of the calyx. Stamens 10–15, mostly included, 5 of them sometimes shorter. Carpels 5, distinct or at first connate, follicular or 2-valved: styles filiform, terminal: stigmas subcapitate. Seeds 2–4 from near the base of each carpel, ascending, oval; the testa rather crustaceous.—Perennial herbs, with trifoliolate stipulate subsessile leaves: leaflets membranaceous, doubly serrate and incised, petiolulate. Flowers (rose-color) axillary and terminal, paniculate-corymbose: peduncles and pedicels elongated.—Roots emetic and cathartic, also said to be tonic.—*Indian-physic. Bowman's Root.*

1. *G. trifoliata* (Mœnch, l. c.): stipules linear-setaceous, entire; leaflets ovate-oblong, acuminate.—*Nutt.! gen. l. c.; DC.! prodr.* 2. *p.* 546; *Darlingt. fl. Cest. p.* 300. Spiræa trifoliata, *Linn.! spec.* 1. *p.* 489; *Michx.! fl.* 1. *p.* 294; *Bot. mag. t.* 489; *Willd.! spec.* 2. *p.* 1063; *Mill. ic. t.* 252; *Bigel. med. bot.* 3. *p.* 11, *t.* 41; *Bart. veg. mat. med.* 1. *t.* 5.

Canada and Western part of New York! to the upper districts of Georgia! in shady woods: scarcely found west of the Alleghany Mountains. (South Western part of Missouri, *Dr. Engelmann.*) June–July.—Stem 2–3 feet high. Flowers large, nearly white. The seeds are intensely bitter to the taste.

2. *G. stipulacea* (Nutt.): stipules ovate, foliaceous, doubly incised; leaves lanceolate, deeply incised.—*Nutt.! l. c.; Ell.! sk.* 1. *p.* 562; *DC.!*

l. c. Spiræa stipulata, *Willd.! enum.* 1. *p.* 542. S. stipulacea, *Pursh, fl.* 1. *p.* 343; *Bart. l. c.* 1. *t.* 6; *Camb. in ann. sci. nat.* 1. *p.* 387, *t.* 28. Western States! to Arkansas! and Louisiana! Western part of Pennsylvania! and New York (not east of the Alleghany Mountains), and in the mountains of the Southern States to Alabama! June.—Radicle and lower leaves almost pinnatifid. Peduncles few-flowered.

TRIBE II. DRYADEÆ.

Potentilleæ & Sanguisorbeæ, *Juss.*

Calyx valvate or often imbricate in æstivation. Stamens sometimes definite. Carpels (achenia) 1-seeded and indehiscent, either few or solitary, or numerous and then collected into a head on a conical or hemispherical torus: ovules solitary, rarely 2, suspended or ascending (sometimes amphitropous): styles lateral or terminal.—Herbs, shrubs, or rarely trees.

The suborder or tribe Sanguisorbeæ of Jussieu, De Candolle, Lindley, &c. appears to comprise genera that are not very nearly related, and is circumscribed by no constant character. The indurated calyx-tube contracted at the orifice is perhaps the best character, but this does not well apply to Alchemilla, Adenostoma, or Cercocarpus. Poterium and Cliffortia only have unisexual flowers. Alchemilla has sometimes four ovaries, and Sibbaldia, Chamærhodos, Waldsteinia, and Dalibarda have often no greater number. If the few and definite stamens be assumed as the leading character of the tribe, Poterium and Cliffortia would be excluded, while Horkelia, Sibbaldia, and Chamærhodos would be included. If the absence of petals be deemed the most important character, we must include Cercocarpus and exclude Purshia, while Agrimonia, Aremonia, and Adenostoma (in which the calyx-tube is indurated, and the ovaries one or two,) will be rejected from the tribe. The division we propose rests upon more important and constant, although less obvious, characters, and appears to produce a more natural arrangement.—It appears to us that the genus Cliffortia is incorrectly described. In the few species that we have examined, the seed is certainly suspended, and the radicle superior.

Series I. *Seed attached to the extremity of the cavity of the ovary farthest from the insertion of the style. Radicle inferior.*

Subtribe 1. EUDRYADEÆ.—Calyx campanulate or turbinate, or rather flat, valvate in æstivation. Stamens numerous. Carpels numerous, dry: style terminal. Seed erect. Radicle inferior.—Herbs or sometimes shrubby plants. Flowers perfect.*

7. DRYAS. *Linn.; Lam. ill. t.* 443; *Gærtn. fr. t.* 74.

Calyx concave at the base, 8–9-parted; the segments nearly equal and in a single series. Petals 8–9, large. Stamens numerous. Achenia numerous, aggregated on the dry receptacle, caudate with the very long persistent plumose terminal styles: stigmas simple. Seed ascending. Radicle inferior.—Depressed suffrutescent plants, with simple leaves and large (white or yellow) flowers. Stipules adnate to the petiole. Peduncles terminal, 1-flowered.

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* Coluria, *R. Br.* and Cowania, *Don.*, also belong to this section.

1. *D. octopetala* (Linn.): leaves oblong-ovate, coarsely crenate-toothed, obtuse at each end, clothed with a white tomentum beneath, the veins prominent; sepals linear; flowers white.—*Linn.! spec.* 1. *p.* 501; *Engl. bot. t.* 31; *Pursh, fl.* 1. *p.* 350; *DC.! prodr.* 2. *p.* 550; *Torr.! in ann. lyc. New York*, 2. *p.* 195; *Hook.! fl. Bor.-Am.* 1. *p.* 174.

Arctic America, and from Greenland! and Labrador! to Behring's Straits! and along the Rocky Mountains (lat. 52°–56°, *Drummond!*) to lat. 41°, *Dr. James!*—Pubescence of the calyx and peduncle mixed with dark glands.

2. *D. integrifolia* (Vahl): leaves oblong-ovate, broader and subcordate at the base, the margin revolute, entire or very slightly toothed towards the base, clothed with a white tomentum beneath; the veins inconspicuous; sepals linear; flowers white.—*Vahl! in act. Hafn.* 4. *p.* 177, *& fl. Dan. t.* 1216; *Hook. exot. fl. t.* 220; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 174. D. tenella, *Pursh! l. c.* D. octopetala, var., *Cham. & Schlecht.! in Linnæa*, 2. *p.* 3.

Arctic America, from Greenland! and Labrador! to Kotzebue's Sound! White Mountains of New Hampshire, *Prof. Peck*, fide *Pursh.* Island of Anticosti, *Pursh!*—Chamisso & Schlechtendal view this plant as a more arctic form of the preceding; but Hooker considers it perfectly distinct.

3. *D. Drummondii* (Hook.): leaves elliptical, slightly attenuate at the base, crenate-serrate, clothed beneath, as well as the prominent veins, with a white tomentum; sepals ovate; flowers yellow.—*Hook.! bot. mag. t.* 2972, *& fl. Bor.-Am. l. c.* D. octopetala, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 21.

In the woody country from lat. 54° to 64°, and about Slave Lake to the Arctic Sea in lat. 68°, *Richardson!* Rocky Mountains, *Drummond!* Island of Anticosti, *Pursh!* (in *herb. Lamb.*)

8. GEUM. *Linn.*; *Lam. ill. t.* 443; *DC. prodr.* 2. *p.* 550.

Geum & Sieversia, *R. Br.*

Calyx rather flat or obconic at the base, deeply 5-cleft, usually with 5 exterior alternate segments or bracteoles. Petals 5, obtuse or emarginate. Stamens numerous, inserted into the disk which lines the base of the calyx in nearly a single or in several rows: filaments somewhat persistent. Achenia numerous, aggregated on the conical or cylindrical dry (glabrous or hairy) receptacle, caudate with terminal persistent styles: stigmas simple or retuse. Seed erect. Radicle inferior.—Perennial herbs, with variously pinnately divided leaves. Flowers white, yellow, or purplish.

§ 1. *Flowers erect (mostly small): segments of the calyx reflexed: head of carpels sessile: styles articulated and geniculate above the middle; the lower portion glabrous, persistent, uncinate at the apex after the deflexed and mostly hairy terminal portion falls away.*—EUGEUM. (Caryophyllastrum & Calligeum, *Fisch. & Meyer.*

1. *G. Virginianum* (Linn.): stem somewhat hirsute or sometimes nearly glabrous above; radical leaves pinnate, or lyrately pinnate with the lateral leaflets minute, or rarely simple and undivided; cauline ones 3–5-foliolate or lobed, toothed or serrate, softly pubescent or somewhat glabrous; stipules mostly toothed; peduncles diverging and elongated in fruit; bracteoles minute; petals (white) about the length of the calyx, cuneate-obovate; carpels sparingly hispid; style glabrous, the upper joint hairy at the base; receptacles densely hirsute.—*Linn.! spec.* 1. *p.* 500; *Murr. in comm. Gœtt.* 5. *p.* 30, *t.* 3; *Willd.! spec.* 2. *p.* 1113; *Michx.! fl.* 1. *p.* 301; *Bigel. fl. Bost. ed.* 2. *p.* 206; *Seringe! in DC. prodr.* 2. *p.* 550; *Hook.! fl. Bor.-Am.* 1. *p.* 175. (scarcely of *Fisch. & Meyer, 3rd ind. sem. St. Petrop.*) G. album, *Gmel. syst.* 2. *p.* 861; *Willd.! enum.* 1. *p.* 556; *Fisch. & Meyer, l. c.* G. Canadense, *Jacq. hort. Vindob.* 2. *t.* 275, not of *Murr.* G. laciniatum, *Murr. l. c. t.* 2? G. Carolinianum, *Walt.*?

Woods and along streams, Canada! to Georgia! Missouri! and Arkansas! June–Aug.—Stem 1–3 feet high. Leaves exceedingly various in their mode of division; the radical ones on long petioles; the upper cauline nearly sessile; the stipules also vary much in size.—We are not acquainted with any white-flowered American species that has a glabrous receptacle. Perhaps the G. Virginianum of Fischer & Meyer (G. heterophyllum, *Desf.*) is not a native of this country. It certainly is not the original Linnæan plant.—*White Avens.*

2. *G. macrophyllum* (Willd.): hispid; stem stout; radical leaves lyrately and interruptedly pinnate; the lateral leaflets obovate or roundish, unequally toothed; the terminal one much larger, roundish-cordate; cauline leaves with 2–4 mostly minute lateral leaflets, the terminal one large, roundish, 3-lobed or parted; the lobes rounded and very obtuse, cuneiform at the base, unequally toothed; stipules toothed or nearly entire; pedicels rather short; bracteoles often wanting; petals (yellow) orbicular-obovate, rather longer than the calyx; carpels slightly hispid at the apex; style glabrous, the upper joint a little hairy; receptacle nearly glabrous.—*Willd.! enum.* 1. *p.* 557; *DC.! l. c.*; *Bongard, veg. Sitcha, l. c. p.* 132; *Cham. & Schlecht.! in Linnæa*, 2. *p.* 5; *Fisch. & Meyer, l. c.* G. strictum β. *Hook.! fl. Bor.-Am.* 1. *p.* 175.

Unalaschka, Sitcha, and N. W. Coast, *Chamisso! Tolmie!* &c. Oregon, *Dr. Scouler! Nuttall!* Lake Superior, *Dr. Pitcher!* Canada, *Mrs. Percival!* White Mountains of New Hampshire, *Nuttall! Dr. Barratt!* June–July.—Stem 1–2 feet high, very hispid, as well as the leaves, when young, the hairs often reflexed, leafy often to the summit. Carpels minutely hairy or pubescent when young, and with a few long bristly hairs towards the apex.—A wholly distinct species. Flowers intermediate in size between G. Virginianum and the following. The pubescence is variable in degree; the leaves being sometimes almost glabrous.

3. *G. strictum* (Ait.): stem and petioles hirsute (hispid at the base), with spreading hairs; radical leaves interruptedly and somewhat lyrately pinnate; the leaflets cuneiform-obovate, incisely lobed and serrate; cauline leaves 3–5-foliolate; the leaflets rhombic-ovate or oblong, acute, sharply toothed and incised; stipules large, incised; flowers numerous; bracteoles shorter than the calyx-segments; petals (yellow) roundish-oval, longer than the calyx; carpels hispid at the apex; style glabrous, the upper joint hairy; receptacle densely pubescent.—*Ait. Kew.* (*ed.* 1.) 2. *p.* 207; *Willd.! spec.* 2. *p.* 1113; *Bigel. fl. Bost. ed.* 2. *p.* 207; *Hook.! l. c.* (excl. β.); *Fisch. & Meyer, l. c.* G. Canadense, *Murr. comm. Gœtt.* 5. *p.* 34, *t.* 4 (not of *Jacq.*); *DC.! l. c.* G. Aleppicum, *Jacq. ic. rar. t.* 93. G. ranunculoides, *Seringe! in DC. prodr.* 2. *p.* 550.

In fields and moist places, New York! and New England States! to Canada! Newfoundland! Saskatchawan! and alpine prairies of the Rocky Mountains, *Drummond!* July–Aug.—Stem stout, 2–3 feet high, simple, dichotomous at the summit. Pubescence of the leaves appressed. Flowers rather large.—The name of Murray is oldest, but it was previously applied by Jacquin to a different species.

§ 2. *Flowers erect, very small: segments of the calyx reflexed: bracteoles wanting: head of carpels exserted on a slender stipe: styles articulated and geniculate towards the summit, glabrous, uncinate after the dissimilar deflexed terminal portion falls away.*—STYLIPUS, Raf.

4. *G. vernum*: somewhat pubescent; stems ascending, few-leaved, slender; radical leaves either roundish-cordate and slightly 3–5-lobed, or pinnate with the leaflets variously incised and lobed; the cauline mostly 3–5-foliolate or lobed, serrate-toothed, ciliate, the uppermost leaflets lanceolate, incised; stipules ovate, incisely toothed; petals (yellow) about the length of the calyx-segments; carpels scabrous, in a globose head; receptacle glabrous.—Stylipus vernus, *Raf. neogen.* (1825) *p.* 3; *Hook.! ic. pl. t.* 286.

Border of woods and thickets, Ohio! and Kentucky! to Arkansas! and Texas! April–June.—Stems 6–20 inches high, weak, dichotomous and few-flowered at the summit. Pedicels elongated in fruit. Calyx-segments triangular-ovate. Stipe nearly the length of the head of carpels. Seed, embryo, &c. as in Geum.—This interesting plant accords with the preceding section in habit and character, except in the constant absence of the bracteoles (which occasionally happens in that section), and in the stipitate head of carpels, in which it agrees with G. rivale.

§ 3. *Flowers large, nodding or erect: segments of the calyx erect or spreading: head of carpels stipitate or sessile: styles articulated and geniculate near the middle; the upper joint mostly plumose and nearly persistent.*—CARYOPHYLLATA, Tourn., Seringe (*excl. spec.*)

5. *G. rivale* (Linn.): stem erect, nearly simple, pubescent; radical leaves lyrately and interruptedly pinnate; the cauline (1–2) trifoliolate, or 3-lobed; flowers few, nodding; petals broadly obovate, emarginate, very abruptly narrowed into a claw, about the length of the calyx; head of carpels stipitate; achenia very hairy; lower joint of the persistent style glabrous above; the upper one joint plumose.—*Linn.! spec.* 1. *p.* 501; *Michx.! fl.* 1. *p.* 301; *Engl. bot. t.* 106; *DC.! prodr.* 2. *p.* 551: *Hook.! fl. Bor.-Am.* 1. *p.* 175.

Bogs and wet meadows, New York! and Pennsylvania! to Newfoundland! and prairies in the northern portion of the Rocky Mountains! May–June.—Stem 1–3 feet high, retrorsely pubescent. Flowers large. Calyx purplish. Bracteoles minute. Petals light purplish-orange, at length longer than the calyx. The creeping rhizoma is astringent, and is employed as a popular remedy.—*Water-Avens. Purple Avens.*

6. *G. geniculatum* (Michx.): stem erect, branching above, many-flowered; cauline leaves 3-parted; petals broadly cuneiform-obcordate, about the length of the calyx; bracteoles reflexed in fruit; achenia hairy; the lower joint of the persistent style hairy throughout, the upper one plumose.—*Michx.! fl.* 1. *p.* 300.

Canada, *Michaux!*—Stem hirsute below with reflexed hairs, pubescent or villous above; the lower portion and the radical leaves wanting in the specimen of *herb. Michx.* Flowers smaller than in G. rivale: petals apparently pale purple.

§ 4. *Flowers rather large, erect: segments of the calyx erect or spreading: head of carpels sessile: style not articulated, wholly persistent.*—SIEVERSIA, (Willd.) R. Br.

* *Styles plumose and much exserted in fruit (leaves not lyrate).*

7. *G. anemonoides* (Willd.): scape 1-flowered, nearly naked; stolons creeping; radical leaves pinnate, glabrous; leaflets about 7–9, narrowly cuneiform, toothed at the apex; stipules filiform; petals roundish, twice the length of the calyx-segments; styles elongated in fruit, plumose.—*Willd.! spec.* 2. *p.* 1117; *Pursh! l. c.; DC.! prodr.* 2. *p.* 553. Sieversia anemonoides, *Willd.! in Berl. mag.* 3. *p.* 398; *R. Br.! l. c.* Dryas pentapetala, *Linn.! spec.* 1. *p.* 501. Caryophyllata Kamstchatica, *Lam. dict.* 1. *p.* 395.

"Islands towards the coast of America," *Pallas!* in *herb. Willd.* "Unalaschka," *Pallas!* in *herb. Lamb.*—Petals white.—Pursh quotes *Egede, descr. of Greenland, t.* 2, as a figure of this plant. Willdenow founded the genus Sieversia on this species, but erroneously stated the styles to be lateral, as Mr. Brown has remarked.

8. *G. triflorum* (Pursh): villous-hirsute; stem erect, nearly naked, about 3–flowered at the summit; radical leaves interruptedly pinnate; leaflets numerous, crowded, cuneiform-oblong, deeply incised and toothed; pedicels elongated; bracteoles linear, longer than the proper calyx-segments, as long as the oblong petals; styles very long and filiform in fruit, plumose.—*Pursh! fl.* 2. *p.* 736; *Seringe, in DC. prodr.* 2. *p.* 533. Sieversia triflora, *R. Br.! in Parry's 1st voy. appx. p.* 276; *Richards.! appx. Frank. journ. ed.* 2. *p.* 21; *Hook.! bot. mag. t.* 2858, *& fl. Bor.-Am.* 1. *p.* 176. S. rosea, *Graham, in Edinb. phil. jour.* 1831.

On rocks &c. Labrador! Newfoundland! Saskatchawan! &c. Canada, *Pursh!* White Mountains of New Hampshire (ex *Hook.*) Watertown, New York, *Dr. Crawe!* Banks of the Ohio, *Mr. Goldie!* Illinois! Missouri! and in the vallies of the Rocky Mountains! May–June.—Scape 6–10 inches high, the upper part clothed, like the pedicels and calyx, with a soft villous pubescence, with 2 opposite imperfect laciniate leaves near the middle, and a similar involucral pair at the origin of the inflorescence and about the middle of each elongated lateral peduncle. Outline of the radical leaves oblong; the terminal leaflet not larger than the others; the lower ones gradually decreasing in size, with minute interposed leaflets. Flowers large. Calyx purplish. Petals white, tinged with purple. Styles at length 2 inches long.

9. *G. glaciale* (Adams): clothed throughout with long silky fulvous hairs; scape 1-flowered; leaves pinnate; leaflets ovate-oblong, the upper and lower ones very small, the others often 1–2-toothed; persistent styles very villous. —"*Adams, act. Mosk.* 5. *p.* 96"; *DC.! l. c.* Sieversia glacialis, *R. Br. l. c.; Cham. & Schlecht.! in Linnæa,* 2. *p.* 5; *Hook! fl. Bor.-Am.* 1. *p.* 176.

Shores of the Arctic Sea west of Mackenzie River (*Sir J. Franklin!*) and Behring's Straits!—Flowers very large, yellow.

** * Styles naked, not exserted in fruit (leaves not lyrate).*

10. *G. Rossii* (Seringe): scape 1-flowered, slightly pubescent above, somewhat 2-leaved; radical leaves interruptedly pinnate, rather glabrous, minutely ciliate; leaflets ovate or cuneiform, 2–3-lobed or entire; petals roundish, longer than the ovate segments of the calyx (the veins all distinct); carpels minutely hirsute; styles not exserted in fruit, glabrous.—*DC. prodr.* 2. *p.* 553. Sieversia Rossii, *R. Br.! in Parry's* 1*st voy. appx. p.* 276, *t. C.; Cham. & Schlecht.! l. c.; Hook.! l. c.* Potentilla nivalis, *Torr.! in ann. lyc. New York*, 1. *p.* 32, *t.* 3, *f.* 2.

β. more pubescent, almost silky when young, somewhat larger; leaflets more numerous and crowded; scape sometimes 2-flowered.—S. humilis, *R. Br.! l. c.* (without a description); *Cham. & Schlecht.! l. c.* Geum triflorum, *Torr.! in ann. lyc. New York*, 2. *p.* 195.

Melville Island, *Mr. James Ross! Capt. Parry! &c.* On James' Peak of the Rocky Mountains, about lat. 42° (at an elevation of 10,000 feet), *Dr. James!* Also Bay of St. Lawrence, *Chamisso! β.* Unalaschka, *Mr. Nelson! Chamisso!* Rocky Mountains, *Dr. James!*—The specimen of Dr. James, on which Potentilla nivalis, *Torr.* was founded, differs from the Sieversia Rossii, *R. Br.* from Melville Island only in the more numerous and crowded leaflets, which are a little more strongly ciliate: the scape is scarcely 3 inches high. A larger specimen, collected by Dr. James, probably in a less elevated region, is about 5 inches high, with more pubescent leaves and a 2-flowered scape, and is nearly intermediate between the former plant and the Sieversia humilis from Unalaschka. The pedicel of each flower bears a bract near the middle, resembling the cauline bracteiform leaves, and consisting, like them, of a small incised lamina with the stipules adnate to its base. Petals yellow. Calyx obconic and hairy at the base.

** * * Styles partly exserted in fruit, hairy below the middle: radicle leaves lyrate: the terminal leaflet large and dilated, radiately veined; the lateral few and minute or wanting.*

11. *G. Peckii* (Pursh): nearly glabrous; scape paniculately branched above, several-flowered, scarcely leafy; radical leaves lyrately pinnate; the terminal leaflet very large, roundish-reniform, somewhat truncate at the base, crenately toothed and somewhat incised; the lateral ones minute; peduncles and calyx clothed with a minute soft pubescence; petals broadly obovate; twice the length of the ovate-triangular calyx-segments; bracteoles minute; styles in fruit about twice the length of the calyx, hairy towards the base. —*Pursh! fl.* 1. *p.* 352: *Bigel.! fl. Bost. ed.* 2. *p.* 208; *DC.! prodr.* 2. *p.* 554. Sieversia Peckii, *R. Br.! in Parry's* 1*st voy. appx. p.* 276; *Hook.! bot. mag. t.* 2863.

On the White Mountains of New Hampshire! where it was discovered by the late Prof. Peck of Harvard University. July.—Scape 12–18 inches high (4–5 inches, ex *Bigelow*), furnished with 3 or 4 small and sessile incised leaves, about 4-flowered. Terminal leaflet of the radical leaves often 4–5 inches in width. Flowers as large as those of G. montanum.

12. *G. radiatum* (Michx.): very hirsute or hispid; scape leafy, paniculately branched at the summit, many- (5–10-) flowered; radical leaves lyrately pinnate; the terminal leaflet very large, broadly reniform, with an open sinus, incisely doubly toothed and somewhat lobed; lateral leaflets few and minute; cauline leaves (4–6), sessile, laciniate-toothed; petals deeply

obcordate, longer than the triangular calyx-segments; bracteoles minute; styles in fruit not twice the length of the hirsute calyx, hairy at the base. —*Michx.! fl.* 1. *p.* 300; *Ell. sk.* 1. *p.* 573. Sieversia radiata, *R. Br. l. c.*, not of *Hook.*

On the Roan Mountain, N. Carolina, *Michaux! Mr. Curtis!* July. —Abundantly distinct from the allied species of the N. W. Coast, with which Pursh and some succeeding botanists have confounded it. Apparently 1–2 feet high. Leaves hispid on the veins beneath, at length almost glabrous above. Pubescence of the peduncles &c. of hirsute and downy hairs intermixed. Flowers large. Petals broadly and deeply obcordate, yellow, with a fulvous spot at the base. Carpels hirsute, as in the allied species, and also the base of the style.—Mr. Curtis has rediscovered this interesting plant in the same locality where (as appears from his herbarium) Michaux had collected it about 40 years before.

13. *G. calthifolium* (Smith): hirsute-pubescent; scape simple, 1–3-leaved, 1–4-flowered; leaves lyrately pinnate; the lateral leaflets few and minute, or often none; terminal leaflet cordate-orbicular, with a deep and narrow sinus, crenately doubly toothed, or somewhat incised; the cauline leaves small, sessile; petals obovate, emarginate or slightly obcordate, longer than the ovate-triangular calyx-segments; bracteoles small; styles in fruit about twice the length of the hairy calyx, hairy except near the summit. —G. Camtschaticum, *Pallas! in herb. Lamb. &c.* G. radiatum, *Pursh! l. c.* not of *Michx.* Sieversia rotundifolia, *Cham. & Schlecht.! in Linnæa,* 2. *p.* 4. S. radiata, *Hook.! fl. Bor.-Am.* 1. *p.* 177, not of *R. Br.*

α. dilatatum: less hairy; leaves somewhat reniform, the sinus either open or closed, rather evenly doubly crenate; the segments of the calyx lanceolate-ovate, entire.—G. calthifolium, *Smith! in Rees, cyclop.; DC. l. c.* Sieversia dilatata, *R. Br.! l. c.* (without a character.) S. calthifolia, *D. Don! in herb. Lamb.*

β. rotundifolium: more hirsute; leaves nearly orbicular, with the deep sinus closed, incisely dentate-crenate; segments of the calyx often with 2 small lateral teeth.—G. rotundifolium, *Langsd.! in DC. l. c.* Sieversia rotundifolia, *D. Don! in herb. Lamb.*

γ. congestum: dwarf, more hirsute.—Sieversia congesta, *R. Br.! l. c.* (without a character.)

North West Coast, Unalaschka, &c., *Pallas! Langsdorff! Menzies! Chamisso! Mertens! Mr. Nelson! Mr. Tolmie!*—Caudex creeping or prostrate. Scapes 3–8 inches high, ascending at the base or erect, slender: the cauline leaves clasping. Flowers as large as in G. montanum, yellow. —We have examined, in different herbaria, many specimens apparently wholly intermediate between these three varieties of what we consider a single species; and Pallas, Chamisso, and Hooker seem to have adopted the same view.

‡ *Doubtful Species.*

14. *G. ciliatum* (Pursh): pubescent; stem simple; leaves rather glabrous, ciliate, the lower ones pinnate, the cauline pinnatifid, the uppermost palmate; segments linear, incised; flowers somewhat corymbose. *Pursh, fl.* 1. *p.* 352.

Banks of the Kooskoosky, *Lewis.* An elegant species; flowers resembling those of G. rivale. *Pursh.*—We do not find this species in Pursh's proper herbarium; but in his Canadian herbarium, formed subsequently to the publication of his Flora, this name is applied to a specimen of G. triflorum.—In Hooker's Flora, this species is by a typographical mistake introduced under the name of G. pubescens.

9. WALDSTEINIA. *Willd. act. nat. cur. Berol.* 2. *p.* 103; *Tratt. Ros.*

Waldsteinia & Comaropsis, *DC.* (excl. spec.)

Tube of the calyx turbinate or obconic; the limb 5-cleft, with 5 alternate sometimes minute and deciduous bracteoles, which are occasionally wanting. Petals 5, sessile, deciduous. Stamens numerous, inserted into the throat of the calyx above the glandular and somewhat crenated border of the disk which lines the calyx-tube: filaments filiform, rather persistent. Achenia few (2–6), dry or somewhat fleshy, minutely pubescent or hairy, inserted on a short (glabrous or villous) receptacle: styles terminal, filiform, deciduous from the carpel by an articulation: stigma simple. Seed erect. Radicle inferior.—Low perennial herbs, with a prostrate or creeping rhizoma, and mostly radical roundish 3–5-lobed or divided leaves. Scapes bracteate, several-flowered. Petals yellow.

The calyx of Dalibarda fragarioides, *Michx.*, is (perhaps always) bracteolate; but the bracteoles are minute and deciduous. This plant, and the nearly allied Siberian species (which we have only seen in the Royal Herbarium at Berlin), with D. lobata, *Ell.*, do not differ from Waldsteinia geoides of Hungary in any important character, except that the receptacle is villous in the former, and glabrous in the latter species, which also has a somewhat leafy scape. The genus Comaropsis, therefore, will form at most only a section of Waldsteinia.

1. *W. fragarioides* (Tratt. l. c.): somewhat hairy; rhizoma rather thick; leaves trifoliolate, with the leaflets broadly cuneiform and petiolulate (or rarely somewhat united), crenate-toothed and incised; scapes erect, bracteate, several-flowered; segments of the calyx shorter than the obovate petals; carpels 4–6, minutely hairy.—Dalibarda fragarioides, *Michx.! fl.* 1. *p.* 300, *t.* 28; *Pursh, fl.* 1. *p.* 351; *Bot. mag. t.* 1567; *Torr.! fl.* 1. *p.* 491. Comaropsis fragarioides, *DC.! prodr.* 2. *p.* 555; *Hook.! fl. Bor.-Am.* 1. *p.* 177. C. Doniana, *DC. l. c.*

Shady woods and hill-sides, Canada! and Northern States! and on the Alleghany Mountains to Georgia (ex *Elliott*). May–June.—Leaves and scapes 4–8 inches high. Leaflets rarely 5. Bracts rather small, foliaceous. The C. Doniana is certainly only a state of this plant with smaller petals. —*Barren Strawberry.*

2. *W. lobata*: hirsute; stems somewhat flagelliform; leaves nearly orbicular, cordate with a narrow sinus, incisely crenate, mostly 3–5-lobed; scapes filiform, ascending, somewhat cymosely 4–8-flowered, bracteate; tube of the calyx narrow; the segments rather longer than the oval petals; carpels mostly 2, canescent.—Dalibarda lobata, *Baldw.! in Ell. sk.* 1. *p.* 571; *Hook.! ic. pl. t.* 76.

Hills near Flint River, Georgia, *Baldwin!* Near Augusta, *Dr. Wray!* and near Columbus in the same State, *Dr. Boykin!* April–June.—Rhizoma slender. Leaves and scapes 4–8 inches high. Leaves hirsute on the veins, clothed with a soft pubescence beneath. Bracts small, foliaceous.

Subtribe 2. Cercocarpeæ.—Calyx tubular, sometimes imbricate in æstivation. Stamens numerous. Carpel solitary, dry: style terminal. Seed erect. Radicle inferior.—Shrubs or small trees. Flowers perfect.

10. CERCOCARPUS. *H. B. & K. nov. gen.* 6, *p.* 223, *t.* 559.

Tube of the calyx cylindrical, very long and pedicelliform, more or less persistent; the limb hemispherical-campanulate, 5-lobed, deciduous: æstivation valvate? Petals none. Stamens 15–25, inserted in 2–3 series on the limb of the calyx: filaments short: anthers oval or roundish, deeply emarginate or cleft at each end, often pubescent. Ovary solitary, free, with a single erect ovule: style terminal, filiform, villous: stigma obtuse. Achenium linear-oblong, coriaceous (membranaceous, *Kunth.*), caudate with the long persistent plumose style, which is more or less included in the slender persistent tube of the calyx. Seed linear, with a membranous testa, destitute of albumen. Cotyledons long and linear.—Shrubs or small trees. Leaves alternate, straight-veined, coriaceous, serrate or entire, on short petioles. Stipules wholly adnate to the base of the petiole. Flowers axillary or terminating short leafy branches, sessile, or on short pedicels, mostly fascicled.

1. *C. parvifolius* (Nutt.! mss.): leaves cuneiform-obovate, silky-pubescent or at length nearly glabrous above, tomentose-canescent beneath, coarsely toothed towards the apex; flowers solitary or in pairs, on short pedicels, recurved; tail of the fruit very long, densely plumose.—*Hook. & Arn.! bot. Beechey, suppl. p.* 337; *Hook.! ic. pl.* (*ined.*) *t.* 323. C. fothergilloides, *Torr.! in ann. lyc. New York*, 2. *p.* 198, not of *H. B. & K.!*

Rocky Mountains, in bushy ravines near the sources of the Platte, *Dr. James! Nuttall!* California, *Douglas!* June.—A low shrub. Leaves scarcely an inch in length, much smaller and less coriaceous than the C. fothergilloides, which has numerous erect sessile flowers, fascicled in the axils, &c.

2. *C. betuloides* (Nutt.! mss.): "somewhat glabrous; leaves broadly obovate, shining and nearly glabrous above, pubescent on the (not very prominent) veins beneath, serrate-toothed towards the apex; flowers 2–6 in a fascicle, on short pedicels, recurved; fruit unknown."—*Hook.! ic. pl. t.* 323. (*ined.*)

"Mountains of St. Barbara, California! April.—"A shrub, with the leaves about twice as large as the preceding, to which it is allied, resembling those of Alnus serrulata, but smaller." *Nuttall.*—We much doubt if this be sufficiently distinct from the foregoing species, of which our specimen in fruit, from Douglas's collection, has the leaves almost as large and nearly as smooth.

3. *C. ledifolius* (Nutt.! mss.): leaves lanceolate, entire, veinless, revolute, at length nearly glabrous above, tomentose beneath, much crowded on the short flowering branches; flowers erect, sessile, 2–3 in a fascicle; tail of the fruit very long and tortuous.—*Hook.! ic. pl. t.* 324. (*ined.*)

"Rocky Mountains, in alpine situations on the summits of the hills of Bear River of Timpanagos, near the celebrated "*Beer Springs*," which abound with carbonic acid. A shrub, or small tree, 6–10 feet high, with white tough wood; the branches gray, terete, covered with circular cicatrizations. Leaves resembling those of Ledum latifolium, very coriaceous, on very short petioles. Stamens and inner surface of the flowers smooth. The achenium, which with its tortuose and plumose tail almost exactly resembles the fruit of some species of Stipa, is coriaceous, and 2-seeded. Testa of the seed

- [illegible] 42. [illegible]
= [illegible]

thin and brown. Embryo straight; the radicle towards the base of the calyx: albumen none." *Nuttall.*

11. PURSHIA. *DC. in Linn. trans.* 12, *p.* 157; *Hook. fl. Bor.-Am.* 1. *p.* 170, *t.* 58.

Calyx tubular-infundibuliform, persistent, 5-cleft at the summit; the lobes ovate, obtuse, spreading, imbricate in æstivation. Petals 5, obovate, unguiculate. Stamens 25, in a single series, inserted with the petals into the throat of the calyx: filaments filiform: anthers roundish. Ovary solitary (2 ex *R. Br.* fide *Hook.*), free, slightly stipitate, with a single erect ovule, attenuate into the subulate style: stigma lateral, extending nearly the whole length of the style. Achenium oblong, attenuate at each end (glandular-pubescent, as well as the calyx), coriaceo-membranaceous, striate, crowned with the persistent glabrous style. Seed obovate: testa membranaceous, separated from the inner coat (albumen, *Hook.*) by a layer of deep purple, resin-like, intensely bitter, granulated matter. Cotyledons broadly oval, flat.—A shrub, with erect branches and numerous very short branchlets: buds scaly. Leaves very small, crowded and fascicled, cuneiform, subsessile, 2–3-toothed at the apex, tomentose-canescent beneath. Stipules minute, triangular. Flowers subsessile, solitary or crowded in the fascicles of leaves: petals yellow?

P. tridentata (DC.! l. c.)—Tigarea tridentata, *Pursh.! fl.* 1. *p.* 33, *t.* 15.

Plains of the Rocky Mountains, principally on the western slopes, and on the Oregon, *Lewis! Douglas! Nuttall!* On the Flat-Head River, *Mr. Wyeth!* "Almost the only shrub to be seen through an immense tract of barren sandy soil from the head-waters of the Missouri to the Falls of the Columbia, and from 38° to 48° of north latitude." *Douglas, in Hook. l. c.* "Not prevalent or abundant as far south as lat. 42°," *Nuttall.*—We have never seen more than a single carpel; and this is to all appearance indehiscent; although DeCandolle describes it as opening by a longitudinal fissure.

Series 2. ***Seed attached next to the insertion of the style, either ascending or suspended. Radicle always superior.***

Subtribe 3. SANGUISORBEÆ.—Calyx-tube mostly indurated and contracted at the mouth; the segments valvate or rarely imbricate in æstivation. Petals often wanting. Stamens few or definite (1–15, rarely more, as in Poterium). Carpels 1–2, or rarely 3–4, dry: styles terminal or lateral: stigma often plumose. Seed suspended, very rarely ascending. Radicle superior.—Herbs or sometimes shrubby plants. Flowers occasionally polygamous or diœcious.

22. SANGUISORBA. *Linn.; Lam. ill. t.* 85.

Flowers perfect, or rarely polygamous. Tube of the calyx quadrangular, 2–3-bracteolate; the limb 4-parted. Petals none. Stamens 4, opposite the calyx-segments: filaments often dilated upwards. Carpels 1–2: style filiform: stigma penicilliform or fimbriate. Achenium dry, included in the indurated 4-winged calyx-tube. Seed suspended. Perennial, rarely annual herbs, with unequally pinnate leaves, and foliaceous persistent stipules: leaflets petiolulate, serrate or pinnatifid, often stipellate. Flowers in very dense ovate or cylindrical spikes.

1. *S. Canadensis* (Linn.): perennial, glabrous; spikes elliptical when young, cylindrical and often much elongated in fruit; stamens much longer than the calyx; filaments flattened and dilated upwards; leaflets ovate or oblong, serrate, obtuse, cordate, usually stipellate; carpel solitary.—S. Canadensis and S. media, *Linn. & authors.*

α. leaflets lanceolate, oblong, or oblong-ovate; spikes white.—S. Canadensis, *Michx.! fl.* 1. *p.* 100; *Torr.! fl.* 1. *p.* 176; *DC.! prodr.* 2. *p.* 594; *Hook.! fl. Bor.-Am.* 1. *p.* 198. Pimpinella maxima Canadensis, *Cornuti, Canad. t.* 174.

β. leaflets ovate; spikes reddish or purple, at least when young.—S. media, *DC.! l. c.; Hook. l. c.* S. Canadensis, *Cham. & Schlecht. in Linnæa,* 2. *p.* 32; *Bongard, veg. Sitcha, l. c. p.* 133. S. Canadensis *β.* latifolia, *Hook. l. c.*

Wet meadows and borders of swamps, Newfoundland! Unalaschka, Sitcha, &c. to the mountains of Georgia. West to Oregon! *β.* Oregon! & N. W. Coast. Aug.–Oct.—Stem 1–4 feet high. Achenium solitary. Calyx 3-bracteolate.—*Burnet-Saxifrage.*

2. *S. annua* (Nutt.! mss.): annual, glabrous; stem branching; leaflets 4–6-pairs, oval, deeply pectinate-pinnatifid; the segments linear and very narrow; heads elliptical; bracteoles 3, large and scarious; filaments short, not dilated.—Poterium annuum, *Nutt.! mss. in Hook.! fl. Bor.-Am.* 1. *p.* 198.

Plains of Red River, Arkansas, abundant in denuded situations, *Nuttall! Dr. Leavenworth!* and on rocks and moist places. Grand Rapids of the Oregon to the Wahlamet, *Douglas! Nuttall!*—May–July.—Stem 10–20 inches high, slender, leafy. Leaflets cleft nearly to the midrib; the segments obtuse or rather acute. Stipules resembling the leaflets. Heads at length oblong. Flowers all perfect, brownish-green. Lobes of the calyx broadly ovate, scarious, thickened at the base. Stamens 4, at length exserted.—Mr. Nuttall distinguishes the Oregon plant, under the name of S. occidentalis, on account of its more simple stems and more acute segments of the leaves; but our specimens from Dr. Leavenworth seem wholly similar. It is truly a Sanguisorba, although the habit is somewhat peculiar.

Poterium Sanguisorba, *Linn.* (*Burnet*, of the gardens) is said by Hooker to grow near Lake Huron, on the authority of a specimen from Dr. Todd. We suspect, however, that it is not a native, but has escaped from a garden.

13. ACÆNA. *Linn.; Vahl, enum.* 1. *p.* 273.

Calyx with 2–3 scaly bracteoles at the base; the tube oblong, constricted at the throat, armed with glochidiate bristles; the limb 3–5-parted. Petals none. Stamens 3–5, inserted on the throat of the calyx. Ovaries 1, or rarely 2: style terminal: stigma cristate or multifid. Achenium enclosed in the indurated glochidiate-echinate calyx-tube. Seed suspended.—Perennial herbs or low suffrutescent plants. Leaves unequally pinnate: leaflets serrate or incised. Flowers in crowded racemose spikes or heads.

1. *A. pinnatifida* (Ruiz & Pav.): flowers in a cylindrical crowded spike, the lower ones somewhat remote; stem erect; leaflets linear-lanceolate, incised [sometimes deeply pinnatifid], hirsute beneath. *DC.—Ruiz & Pav. fl. Per.* 1. *p.* 68, *t.* 104, *f.* 1; *Lindl. bot. reg. t.* 1271; *Hook. & Arn.! in bot. misc.* 3. *p.* 307, *& bot. Beechey, suppl. p.* 339.
California, *Douglas!*—The Californian plant is said by Hooker & Arnott to accord with their var. γ. of the Chilian A. pinnatifida, which seems to vary greatly in its foliage. The leaflets in this form are deeply pinnatifid, with very narrow segments, and the upper part of the stem is almost tomentose. The 5 calyx-segments are articulated with the tube, thick and coriaceous: the stamens are usually 3.

14. ADENOSTOMA. *Hook. & Arn. bot. Beechey, p.* 139, *t.* 30; *& p.* 338.

Calyx infundibuliform-campanulate, 10-striate, 5-toothed; the teeth colored, short and broad, mucronulate-acute, spreading; the throat scarcely contracted, furnished with 5 transverse oblong fleshy glands. Petals 5, orbicular, scarcely unguiculate, spreading. Stamens 9–15, erect-spreading, inflexed in æstivation: filaments filiform: anthers roundish. Ovary obovate, with a single or 2 collateral suspended ovules, obliquely truncate and pubescent at the summit: style terminal or nearly so, flexuous, included: stigma thickened, obtuse. Achenium coriaceous, 1-seeded, included in the indurated tube of the calyx.—A rigid glabrous evergreen shrub, with numerous branches. Leaves sessile, densely fascicled, rigid, linear-acerose, with minute scale-like stipules. Flowers small (white), clustered in short spikes, which are disposed in compound dense terminal panicles: bracts numerous, minute.

A. fasciculata (Hook. & Arn.! l. c.)

α. leaves mostly acute, slightly petioled.

β. leaves shorter and thicker, sessile, usually obtuse.—A. brevifolia, *Nutt.! mss.*
On the declivities of mountains, St. Barbara, St. Francisco, and Monterey, California, *Beechey, Douglas! Nuttall!* β. St. Diego, *Nuttall!* May.—This singular shrub has somewhat the habit of Tamarix, as Mr. Nuttall remarks. The rigid somewhat triangular leaves are about half an inch in length (in var. β. shorter), and are inclined to fall in dried specimens. Mr. Nuttall proposes to form a distinct section or tribe for its reception (Adenostomaceæ, *Nutt.*); but we leave it for the present in Sanguisorbeæ, with which it has many points of resemblance: in foliage it is not unlike Margyricarpus.

15. AGRIMONIA. *Tourn. inst. t.* 155; *DC. prodr.* 2. *p.* 587.

Calyx turbinate, armed with hooked bristles above, contracted at the throat; the limb 5-cleft, connivent after flowering. Petals 5. Stamens

12–15, inserted with the petals into the glandular ring in the throat of the calyx. Ovaries 2: style terminal. Achenia included in the indurated tube of the calyx. Seed suspended.—Perennial herbs, with pinnate leaves, and yellow flowers in slender spicate racemes. Bracts 3-cleft: pedicels 2-bracteolate.—*Agrimony.*

1. *A. Eupatoria* (Linn.): stem and petioles hirsute; leaves interruptedly pinnate: leaflets oblong-obovate, 5–7, with minute ones intermixed, coarsely toothed, hirsute-pubescent or nearly glabrous beneath; stipules with a few coarse teeth; calyx sulcate towards the base; petals twice the length of the calyx.—*Pursh! fl.* 1. *p.* 335; *Engl. bot. t.* 1335; *Torr.! fl.* 1. *p.* 473; *DC.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 196.

β. hirsuta (Torr. l. c.): smaller and more hairy.

γ. mollis: upper part of the stem, petioles, and lower surface of the leaves clothed with a dense and soft appressed pubescence.

δ. parviflora: smoother; racemes more slender, with the flowers rather remote.—*Hook. l. c.* (excl. syn.) A. striata, *Michx.! fl.* 1. *p.* 287. A. parviflora, *DC.! l. c.*

Borders of woods, Canada! to Georgia! Kentucky! and Louisiana! γ. Red River, *Dr. Pitcher!* July.—Stem 2–4 feet high. Spikes virgate. Flowers variable in size, rather distant in fruit.—The petals in Michaux's specimen of A. striata are not white, as he has stated them to be, but yellow.

2. *A. parviflora* (Ait.): stem and petioles very hirsute with brownish spreading hairs; leaves interruptedly pinnate; leaflets numerous (11–19), crowded, with smaller ones intermixed, lanceolate, acute, deeply serrate-incised with numerous and regular teeth, scabrous above, pubescent beneath; stipules acutely incised; racemes virgate; flowers small.—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 130; *Pursh! fl.* 1. *p.* 336. A. suaveolens, *Pursh! l. c.*; *Ell. sk.* 1. *p.* 636 (ex descr.) A. Eupatoria, *Michx.! fl.* 1. *p.* 287 (chiefly).

Woods and dry meadows, Pennsylvania to Virginia! and the upper districts of S. Carolina! and Georgia! west to Kentucky! and Tennessee. July–Aug.—Stem 4–5 feet high. Leaflets 2–3 inches long, narrow, often nearly linear, serrate with 10–12 deep acute teeth on each side. Racemes many-flowered: pedicels distinct, longer than the bracts. Petals small, pale yellow.—The resinous dots, which are to be found on the lower surface of the leaves in nearly all the species, are in this particularly abundant throughout, among the hairs, rendering the plant somewhat viscous, and giving it an agreeable balsamic scent. In foliage it somewhat resembles A. repens; but the leaflets are still narrower, the flowers about half the size, and the bracts inconspicuous; the raceme loose, &c.

3. *A. incisa:* stem and petioles clothed with a soft appressed pubescence, and hirsute spreading hairs intermixed; leaves interuptedly pinnate; leaflets 3–5 pairs, with smaller ones interposed, oblong, short, deeply incised with 3–6 spreading unequal teeth on each side, nearly glabrous above, canescently hairy beneath; stipules deeply cleft; racemes virgate; the flowers small and remote, on very short pedicels.

N. Carolina? Georgia, *Le Conte!* Alabama, *Dr. Gates!* Tampa Bay, Florida, *Dr. Burrows!*—This seems to be a very distinct species, and to prevail in the southern Atlantic States; while the preceding prefers the mountains, and has a more western range. The flowers are rather larger than in A. parviflora; the lobes of the calyx very short; the leaflets not half the length of that species, incisely pinnatifid. A fragment exists in Michaux's herbarium, confounded with his A. Eupatoria.

16. ALCHEMILLA. *Tourn.; DC. prodr.* 2. *p.* 589.

Calyx-tube obconic, contracted at the throat by an annular disk; the limb 4- (rarely 5-) parted, with as many smaller alternate lobes (bracteoles). Petals none. Stamens 1–4. Ovaries 1–4, stipitate or sessile in the bottom of the calyx: style arising from near the base of the ovary, filiform: stigma mostly capitate. Achenia 1–4, included in the persistent calyx. Seed fixed near the base of the carpel (at the origin of the style), ascending, almost orthotropous. Radicle superior.—Low herbs, mostly with palmately lobed or compound leaves, adnate stipules, and small corymbose flowers.

§ 1. *Perennial: alternate lobes of the calyx or bracteoles smaller than the others: stamens* 2–4.—ALCHEMILLA, Linn.

1. *A. vulgaris* (Linn.): leaves radical, reniform, 7–9-lobed to about one-third their depth; the lobes somewhat semi-orbicular, serrate throughout; flowers in terminal dichotomous corymbs.—*Fl. Dan. t.* 963; *Engl. bot. t.* 597; *DC.! prodr.* 2. *p.* 589; *Hook.! fl. Bor.-Am.* 1. *p.* 197.
Greenland! and Labrador! but not elsewhere detected in N. America.

2. *A. alpina* (Linn.): leaves radical, 5–7-parted to the base; the segments cuneiform-oblanceolate, incisely serrate with appressed teeth at the apex, silky beneath; flowers corymbose.—*Fl. Dan. t.* 49; *Engl. bot. t.* 244; *Pursh, fl.* 1. *p.* 112.
Greenland: also on the summits of the White Mountains, New Hampshire, and Green Mountains, Vermont, according to Pursh; but this is extremely doubtful.

§ 2. *Annual: alternate lobes of the calyx minute: fertile stamens* 1–2: *anthers* (*by confluence*) *nearly* 1-*celled*.—APHANES, Linn.

3. *A. arvensis* (Scopoli): leaves pubescent, petioled, 3-parted; the segments 2–3-cleft; flowers axillary, glomerate. *DC.*—*Scop. fl. Carn.* 1. *p.* 115; *Pursh, l. c.*; *DC.! l. c.* Aphanes arvensis, *Linn.! l. c.*; *Fl. Dan. t.* 973; *Lam. ill. t.* 87.
Virginia, in fields, *Clayton!* probably introduced.—We have seen no American specimens except those in the herbarium of Clayton. The two following species of Mr. Nuttall are extremely near the present.

4. *A. occidentalis* (Nutt.! mss.): "somewhat hirsute; leaves smaller, smoothish, petioled, 3-parted; the segments 2–3-cleft; flowers axillary, clustered; calyx 4-cleft, with 4 intermediate teeth; the lobes acute and much shorter than the tube.
"Rocky plains of the Oregon, towards the sea; common.—Closely allied to A. arvensis, but a much smaller plant; the limb of the calyx shorter, with the intermediate teeth more conspicuous. The seed is also smaller and paler." *Nuttall.*

5. *A. cuneifolia* (Nutt.! mss.): "somewhat hirsute; leaves cuneiform, cleft and lobed at the summit only, 3-cleft; the segments short; flowers axillary, clustered; calyx 5-cleft, the intermediate teeth obsolete.
"Dry plains, St. Barbara, California.—A slender species, with the leaves much longer than broad. Segments of the calyx acute, with now and then a rudimentary or solitary intermediate tooth." *Nuttall.*

Subtribe 4. CHAMÆRHODEÆ.—Calyx campanulate or rather flat, valvate in æstivation. Stamens 5–10. Carpels 5–10, or sometimes numerous, dry (as well as the receptacle): styles lateral or terminal. Seed ascending or suspended. Radicle superior.—Herbs or low suffrutescent plants.

17. SIBBALDIA. *Linn.* (partly); *Ledeb. fl. Alt.* 1. *p.* 480.

Calyx rather flat, 5-cleft and 5-bracteolate. Petals 5, linear-oblong, minute. Stamens 5, alternate with the petals, inserted into the margin of the villous disk which lines the base of the calyx: filaments short. Achenia 5–10, on very short hairy stipes: styles lateral: stigmas capitate, depressed. Seed ascending, amphitropous. Radicle superior.—Procumbent or depressed suffruticose plants, not glandular. Petals white or yellow.

The genus differs from Potentilla only in the fewer stamens and pistils, and minute petals.

1. *S. procumbens* (Linn.): leaves trifoliolate, on long petioles; leaflets cuneiform, 3-toothed at the summit, glabrous above, pubescent beneath; petals acute, shorter than the calyx (yellow).—*Engl. bot. t.* 897; *Fl. Dan. t.* 32; *Pursh, fl.* 1. *p.* 211; *DC. l. c.*; *Cham. & Schlecht. in Linnæa*, 2. *p.* 28; *Hook.! l. c.*

Greenland! Labrador! Unalaschka! and on the summits of the Rocky Mountains, lat 52°–56°, *Drummond! Douglas!* to lat. 42° (near perpetual snow), *Dr. James! Nuttall!* Also on the Mountains of Canada and Vermont, according to Pursh: but this is very doubtful.

18. CHAMÆRHODOS. *Bunge, in Ledeb. fl. Alt.* 1. *p.* 431.

Calyx campanulate, deeply 5-cleft, ebracteolate; the base lined with a membranous disk, which is very densely bearded at the margin. Petals 5, obovate. Stamens 5, opposite the petals! and inserted with them into the sinuses of the calyx above the disk: filaments subulate, short, persistent. Achenia 5–10 or more: styles arising near the base of the ovaries, subulate. Receptacle conical, villous. Seed ascending, nearly orthotropous. Radicle superior.—Small erect and branching glandular-pubescent herbs; perennial or biennial. Leaves many-cleft; the segments linear. Inflorescence dichotomously cymose. Petals white or purplish.

1. *C. erecta* (Bunge): stems slender, paniculately branched; radical leaves rosulate, ternately or biternately many-cleft; the segments very narrow, obtuse; the upper cauline ones 3–5-cleft; petals (white) longer than the calyx; ovaries 5–20.—*Bunge, in Ledeb.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 196. Sibbaldia erecta, *Linn.*; *Lam. ill. t.* 221, *f.* 2; *DC.! prodr.* 2. *p.* 587.

β. Nuttallii: flowers smaller; petals scarcely longer than the calyx.—C. Nuttallii, *Pickering! mss.* Sibbaldia erecta *β.* parviflora, *Nutt.! gen.* 1. *p.* 207.

Rocky Mountains, lat. 52°–56°, *Drummond!* and on the Saskatchawan, *Richardson.* *β.* Missouri, near the Mandan villages, *Nuttall!*—The plant of Drummond exactly accords with Altaic specimens, some of the forms of which we cannot well distinguish from Mr. Nuttall's plant.

19. HORKELIA. *Cham. & Schlecht. in Linnæa*, 2. *p*. 26.

Calyx campanulate, 5-cleft, and with 5 alternate segments or bracteoles. Petals 5, mostly longer than the calyx, obovate or cuneiform, unguiculate. Stamens 10, in 2 series: filaments shorter than the calyx-segments, dilated, often deltoid, persistent; those opposite the petals rather smaller and inserted lower down. Ovaries numerous, fixed by their middle to the dry conical villous receptacle: styles filiform, terminal, articulated with the ovary by a broad base, at length deciduous: stigmas obtuse. Achenia smooth, reniform-ovate. Seed suspended, obovate, with a thick and firm brownish testa. Colyledons oval, flat: radicle slightly incurved, superior. Perennial herbs, with somewhat the aspect of Potentilla. Leaves pinnate or pinnately parted: the leaflets incised, the upper stipules and bracts mostly incised or multifid; the lower stipules mostly adnate to the petiole; the upper ones usually free. Flowers (white or rose-color) in crowded or subcapitate cymes.

The filaments which are opposite the petals sometimes fall away with them: the others are wholly persistent.

1. *H. Californica* (Cham. & Schlecht.): villous-pubescent, somewhat viscid at the summit; radical and lower cauline leaves about 11-foliolate; leaflets roundish-cuneiform, deeply incised and toothed; stipules incised or pinnatifid; cyme expanded, loose, the flowers all pedicellate; segments of the calyx large, nearly twice the length of the oblong petals; the outer or bracteolar ones ovate-oblong, mostly 2–3-toothed, equalling or rather longer than the triangular-lanceolate acute inner or true ones.—*Cham. & Schlecht.! l. c.* H. grandis, *Hook. & Arn. bot. Beechey, suppl. p*. 339.

St. Francisco, California, *Chamisso! Douglas.*—Root thick. Stem 1–2 feet high. Leaflets mostly somewhat alternate, as is often the case in all the species. Flowers about twice as large as those of H. congesta: segments of the calyx foliaceous.—We have not examined the specimens of H. grandis, *Hook. & Arn.*; but from a comparison of their description with the plant of Chamisso, are satisfied that it is identical with this species. In a cymose inflorescence of this kind, no great dependence is to be placed on the length of the *alar* peduncles; and besides, those of the lower flowers are of considerable length in Chamisso's plant.

2. *H. congesta* (Hook.): lower part of the stem and the 13–15-foliolate leaves very hirsute with long hairs, nearly glabrous at the summit; leaflets narrow, cuneiform, incised chiefly at the apex; stipules almost filiformly many-parted; flowers more or less crowded on the branches of the large dense, or at length spreading, fastigiate cyme; peduncles and pedicels glandular; bracts very short, 3–5-parted; bracteolar calyx-segments lanceolate, much shorter and smaller than the triangular true ones, mostly entire; petals very broadly cuneiform, longer than the calyx.—*Hook.! bot. mag. t*. 2880, *& fl. Bor.-Am.* 1. *p*. 196; *Hook. & Arn.! bot. Beechey, suppl. p*. 339. H. hirsuta, *Lindl.! bot. reg. sub fol.* 1997. H. pilosa, *Nutt.! mss.*

Interior of Oregon, and on the low hills of the Umtqua River, lat. 41°–42°, 3 - 4 *Douglas!* Plains of the Wahlamet, *Nuttall!*—Root thick, fusiform. Stem

1–2 feet high. Cyme naked, many-flowered, at length expanded and rather loose, for this genus; the flowers (which are larger than any other species except H. Californica) all distinctly pedicellate. The bracteoles are usually entire; but we find them occasionally 2-toothed or even divided to the base, affording a confirmation of the view, that these organs are the stipules of the sepals united two and two.

3. *H. fusca* (Lindl.): viscous-pubescent; radical leaves 12–19-foliolate; leaflets cuneate-oblong, pinnatifid or palmatifid and incised; stipules deeply laciniate; flowers crowded on the branches of the compound cyme; bracts palmatifid, much shorter than the glomerules; bracteolar calyx-segments linear, shorter and much smaller than the triangular-lanceolate true ones; petals cuneiform-obcordate, much longer than the calyx.—*Lindl.! bot. reg. t.* 1997; *Hook. & Arn.! l. c.*

Interior of Oregon, *Douglas!*—Stem 2–3 feet high. Cymes many-flowered.—The figure cited above does not well represent the outer calyx-segments, nor the dilated filaments of the native dried specimens.

4. *H. cuneata* (Lindl.): villous-pubescent; radical leaves 15–25-foliolate; leaflets roundish-cuneiform, deeply incised; stipules ovate-lanceolate, mostly entire; flowers subcapitate on the branches of the cyme; bracts 3-cleft, shorter than the villous heads; bracteolar calyx-segments lanceolate-ovate, entire, about the length of the lanceolate-triangular true ones, shorter than the obovate-oblong petals.—*Lindl.! l. c. sub fol.* 1197; *Hook. & Arn.! l. c.* H. Douglasiana, *Nutt.! mss.*

St. Francisco & St. Barbara, California, *Douglas! Nuttall!*—Stem 6–18 inches high. Petals white. Anthers at length dark brown.

5. *H. parviflora* (Nutt.! mss.): tomentose; upper part of the stem viscidly villous; radical leaves 9–13-foliolate; leaflets short, roundish, the upper ones cuneiform, incised; stipules ovate-lanceolate, small, entire or toothed; flowers much crowded on the branches of the fastigiate cyme; bracts 3–5-cleft, much shorter than the glomerules; bracteolar calyx-segments linear-subulate, shorter than the narrowly triangular true ones; petals spatulate, longer than the calyx.

"Plains of the Oregon towards the Rocky Mountains, in bushy places: common. July–Aug.—About a foot high. Root thick, fusiform. Flowers small: petals narrow, rose-color." *Nuttall.*—A distinct species, allied to H. cuneata.

6. *H. capitata* (Lindl.): somewhat glabrous; stem viscous-pubescent towards the summit; radical leaves about 13-foliolate; leaflets laciniate-incised, the lower ones roundish-cuneiform, the upper oblong and attenuate at the base; stipules entire or 3-parted; head of flowers dense, shorter than the laciniate bracts; bracteolar calyx-segments lanceolate-subulate, about the length of the true ones, shorter than the broadly cuneiform petals.—*Lindl.! l. c. sub fol.* 1197; *Hook. & Arn.! l. c.*

Cascade Mountains of the Oregon, *Douglas!*—Leaflets, as also the bracts, pretty large, and mostly pinnately incised.

Subtribe 5. FRAGARIEÆ.—Calyx flattish, valvate in æstivation. Stamens numerous. Carpels numerous, dry, crowded on a conical or hemispherical (dry or fleshy) torus: styles lateral or nearly terminal. Seed suspended or ascending. Radicle superior.—Herbs, or very rarely shrubby plants.

20. POTENTILLA. *Linn. gen. p.* 255; *Juss. gen. p.* 338.

Potentilla & Tormentilla, *Linn.* Potentilla, *Nestl. & Lehm.* excl. Comarum.

Calyx concave at the bottom, deeply 4–5-cleft, with 4–5 alternate exterior segments or bracteoles. Petals 4–5, obtuse or obcordate, deciduous. Stamens numerous, inserted into the margin of the usually hairy disk which lines the base of the calyx: filaments filiform or subulate. Ovaries numerous, collected into a head on the flattish persistent dry villous receptacle: styles either lateral or nearly terminal, deciduous: stigmas obtuse or somewhat capitate: ovule always inserted next the insertion of the style, and accordingly either suspended or ascending. Achenia numerous. Radicle always superior.—Herbaceous or suffruticose plants, with pinnately or palmately compound leaves. Stipules of the lower leaves adnate to the petiole. Flowers solitary or cymose, yellow or white, rarely red or purple.

This genus presents some diversities in respect to the style and ovule, which seem to have escaped notice hitherto.

§ 1. *Style terminal or nearly so, or inserted above the middle of the ovary: seed anatropous, suspended or pendulous.*—EUPOTENTILLA.

This division, which comprises by far the greater part of the genus, contains two obvious sections, viz: POTENTILLASTRUM, *Seringe* (excl. spec.), including the species with glabrous carpels (which are sometimes hairy at the insertion) and mostly yellow flowers: and FRAGARIASTRUM, *Seringe* (excl. spec.), including those with villous or comose carpels, the receptacle being also densely villous, and chiefly white or reddish flowers. There are, we believe, no true species of the latter section in North America. The former might perhaps be best subdivided by means of characters taken chiefly from the style; which in P. Pennsylvanica and all its allies, P. recta, and the allied species, P. Norvegica, supina and many others, is short, rather fleshy or perhaps glandular, and thicker at the base where it is articulated with the apex of the ovary, or is slightly lateral. In P. verna, aurea, Canadensis, and the species most resembling these, the style is longer, filiform, and more persistent, not thickened but usually attenuated at the base, and inserted below the apex of the ovary. A pretty complete series may however be traced between these and the preceding forms: and P. Anserina is intermediate in structure between them and those with almost basal styles, and ascending nearly orthotropous ovules. The character of: Style lateral and seed suspended, generally given to Potentilla, is almost wholly incorrect; for whenever the insertion of the style is deeply lateral, the seed is ascending.—All our species of this section have yellow flowers.

* *Annual or biennial (achenia mostly striate or ribbed).*

1. *P. Norvegica* (Linn.): hirsute; stem erect, at length dichotomous above; leaves palmately 3-foliolate, the cauline ones on very short petioles; leaflets obovate-oblong, the uppermost lanceolate, coarsely and incisely serrate; stipules ovate-lanceolate, mostly entire; cyme leafy; the alar pedicels elongated; calyx-segments longer than the obovate emarginate (pale yellow) petals; achenia rugose-costate or striate, sometimes almost even.—*Linn.! spec.* 1. *p.* 449; *Fl. Dan. t.* 171; *Michx.! fl.* 1. *p.* 302; *DC.! l. c.*; *Hook.! l. c.*; *Darlingt.! fl. Cest. p.* 303.

β. stem less branched, leafy; petals very pale yellow.—P. Monspeliensis, *Linn.* P. hirsuta, *Michx.! l. c.*; *Pursh! l. c.*; *Hook.! l. c.* P. Morisoni, *DC.! l. c.*

Pastures, road-sides, and waste places throughout the Northern and Middle States! as a weed; also in S. Carolina, *Elliott;* apparently introduced; but indigenous in the northern part of New York! and throughout Canada! to Labrador! Arctic America, Oregon, Norfolk Sound! and Sitcha. July–Aug.—Neither the mode of growth, nor the toothing of the leaves furnish any constant character to distinguish the P. hirsuta. The achenia in some specimens are almost even, in others strongly striate-rugose or ribbed; but both forms occur as well in the true P. Norvegica as in the P. hirsuta. Koch describes the radical leaves as pinnate with 2 pairs; but this we have never observed.

2. *P. rivalis* (Nutt.! mss.): "clothed with soft somewhat viscous pubescence; stem erect, much branched; radical leaves pinnately 5-foliolate; the leaflets crowded, and the 3 upper ones confluent; those of the cauline leaves 3, often confluent, oblong, cuneiform at the base, coarsely serrate; stipules ovate, nearly entire; flowers numerous, small, on rather short pedicels; calyx-segments acute; petals inconspicuous; achenia smooth and even.
"In alluvial soil along the Lewis River." July.—A very distinct species, allied to P. Norvegica. Cauline leaves small. Flowers inconspicuous.

3. *P. paradoxa* (Nutt.! mss.): "decumbent at the base; pubescent; leaves pinnate; leaflets 7–9, obovate-oblong, incised, the upper ones confluent; stipules ovate, mostly entire; peduncles [alar] solitary, recurved in fruit; calyx-segments all nearly equal, acute, about the length of the obovate petals; receptacle villous; achenia striate, 2-lobed; the lower portion (the enlarged base or insertion filled with starch) as large as the proper carpel. P. supina, *Michx. fl.* 1. *p.* 304; *Hook. l. c.;* not of *Linn.*"
Banks of the great western rivers, the Ohio! Mississippi! Missouri! &c. to Oregon. (*Nuttall*)—We observe the curious deposition of starchy matter at the base of the carpels, pointed out by Mr. Nuttall, forming, as it were, a kind of albumen exterior to the seed: but otherwise our plant minutely resembles the European, and especially the Siberian forms of P. supina; except that it is usually smaller, and Mr. Nuttall suspects it to be perennial.

* * *Perennial (achenia smooth): leaves pinnate; the leaflets sometimes crowded or almost palmate.*

4. *P. sericea* (Linn.): flowering stems ascending, 1–2-leaved, few-flowered; leaflets 9–11, crowded, oblong, pinnatifid, silky-tomentose on both sides, whitish beneath; stipules lanceolate, mostly entire.—*Lehm.! Pot. p.* 66, *t.* 6; *DC.! prodr.* 2. *p.* 582. P. dasyphylla, *Ledeb. fl. Alt.?*
β. glabrata (Lehm.): older leaves much less tomentose.—*Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 189.
Rocky Mountains between latitude 52° and 56°, *Drummond!* (*β.* only) —A Siberian species.

5. *P. effusa* (Dougl.): canescently tomentose; stem ascending, weak; leaves interruptedly pinnate; leaflets oblong, incisely serrate; flowers dichotomously cymose; stipules lanceolate, acuminate, entire; segments of the calyx acuminate; equalling the obcordate petals.—*Lehm.! stirp. pug.* 2. *p.* 8, *& in Hook. l. c.*
β. filicaulis (Nutt.! mss.): "flowering stems filiform (about 3 inches high), few-flowered; leaflets unequally incised."
γ. gossypina (Nutt.! mss.): "very tomentose and soft; stem nearly erect, leafy; leaflets incisely but not deeply serrate."
On the Assiniboin River, &c., *Douglas!* *β.* Rocky Mountains towards the sources of the Platte, *Nuttall!* July.—Stem about a foot high. Brac-

teolar calyx-segments very small. Receptacle villous. Achenia very glabrous.—The var. γ. of which Mr. Nuttall collected but a single specimen, not quite in flower, will probably prove to be a distinct species, as the discoverer supposes.

6. *P. Pennsylvanica* (Linn.): stem erect, softly tomentose or rather villous; leaves pinnately 5–9-foliolate, canescently tomentose, as also the peduncles and calyx; leaflets oblong, obtuse, pinnatifid or pinnately incised; the superior ones larger, often confluent at the base, and mostly crowded; the inferior pair often very small; stipules entire or incised; cyme at length dichotomous and expanded, fastigiate; petals roundish-obovate, emarginate, slightly exceeding the rather acute segments of the calyx.—*Linn.! mant. p.* 76; *Jacq. hort. Vindob.* 2. *t.* 189; *Willd.! spec.* 2. *p.* 1099; *Michx.! fl.* 1. *p.* 304; *Pursh, fl.* 1. *p.* 356.

α. *communis:* leaflets almost glabrous above when old, with elongated lanceolate rather spreading laciniæ; the lowest ones rather distant, very small, entire or toothed.—P. Pennsylvanica, *Lehm.! Pot. p.* 55, *& in. Hook. l. c.* 1. *p.* 188; *and of authors.* P. Missourica, *Hornem.; Bot. reg. t.* 1412.

β. *strigosa* (Pursh!): smaller; leaflets mostly tomentose on both surfaces, deeply pectinate-pinnatifid; the segments linear, with revolute margins, entire; stipules laciniate.—P. pectinata, *Fischer.* P. absinthiifolia, *Dougl.! mss.* P. holosericea, *Nutt.! mss.* P. Pennsylvanica, β. strigosa, *Lehm.! l. c.*

γ. *bipinnatifida:* leaflets crowded (3–5) and often almost palmate, deeply pinnatifid (silky-pubescent but not canescent above); the segments linear, elongated, mostly spreading.—P. bipinnatifida, *Dougl.! in Hook. l. c.* P. arguta, *Lehm.! l. c.*, not of *Pursh.*

δ. *pulcherrima:* leaflets much crowded (the lower minute ones wanting), elliptical-oblong, pinnatifid-serrate, with lanceolate-oblong scarcely spreading teeth (silky-pubescent or nearly glabrous above); stipules mostly entire. —P. pulcherrima, *Lehm.! l. c.*

ε. *Hippiana:* leaflets narrowly oblong, approximate but scarcely crowded (silky above, silvery-canescent beneath), pinnatifid-serrate; the teeth slightly spreading, connivent when young; stipules ovate or lanceolate, entire or somewhat toothed.—P. Hippiana, *Lehm.! stirp. pug.* 2. *p.* 7, *& in Hook. l. c., t.* 64. P. leucophylla, *Torr.! in ann. lyc. New York*, 2. *p.* 197, not of *Pallas.* P. dealbata, *Dougl.! mss.* not of *Ledeb.*

Canada! and throughout British America to Kotzebue's Sound! Also a native of Siberia; but not found within the limits of the United States east of the Mississippi. β. Rocky Mountains to lat. 42°, *Nuttall!* On the Missouri, *Bradbury!* γ. Saskatchawan! &c. δ. & ε. Saskatchawan! and in the Rocky Mountains to the sources of the Platte, *Dr. James!*—We know not whether the botanists who have paid greatest attention to this genus will coincide with our views respecting the species here united with P. Pennsylvanica; but the examination of an extensive series of specimens seems inevitably to lead to this result. The stems are usually several from the same root, 1–2 feet high.

7. *P. rubricaulis* (Lehm.): stem ascending; leaves digitate-pinnate; the radical ones 5-foliolate, the cauline 3-foliolate; leaflets oblong, approximate, pinnatifid-serrate, glabrous above, tomentose beneath; stipules entire; petals obcordate, rather longer than the calyx; receptacle somewhat glabrous. *Lehm.! l. c., & in Hook. fl. Bor.-Am.* 1. *p.* 191.

About Bear Lake in lat. 66, *Richardson.*—Stems a foot high, pubescent, purplish. Laciniæ of the leaflets linear-lanceolate, obtuse. Segments of the calyx ovate-lanceolate, twice the size of the bracteoles.—We have not examined this species. It appears to be nearly related to P. pulcherrima of the same author.

8. *P. Drummondii* (Lehm.): stem herbaceous, nearly erect, lax; radical leaves irregularly and somewhat verticillately pinnate, 7–11-foliolate; the cauline 5-foliolate; leaflets obovate, truncate, cuneiform at the base, deeply incised, nearly glabrous, ciliate; stipules (large) ovate, entire; petals obcordate, veiny, twice the length of the calyx. *Lehm.! l. c., & in Hook. fl. Bor.-Am.* 1. *p.* 189, *t.* 65.

Alpine woods in the Rocky Mountains north of the Smoking River, in lat. 56°, scarce. *Drummond!* (v. sp. in *herb. Hook.*)—Stem 1½ foot high, somewhat hairy, few-leaved. Radical leaves on long petioles: those of the stem 1–3, distant, on short petioles. Flowers somewhat panicled at the summit of the stem: pedicels long and slender, very hairy towards the summit. *Lehm.*

9. *P. Plattensis* (Nutt.! mss.): "stems decumbent, clothed, as well as the leaves, with minute strigose appressed hairs; radical leaves pinnately 7–11-foliolate; the cauline (about 2) 3–5-foliolate; leaflets cuneiform, deeply pinnatifid-incised, the segments oblong or linear; those of the cauline leaves much crowded; stipules large, broadly ovate, entire; panicle few-flowered, the pedicels elongated; petals obcordate, a little longer than the acuminate calyx-segments."

Plains of the Platte; common, *Nuttall!*—Stems 6–12 inches high, weak. Mr. Nuttall compares this species with P. diversifolia, which it indeed resembles, but is very distinct. It is, judging from the figure, much more nearly allied to P. Drummondii, but is a smaller plant, the pedicels are not clothed with long bristly hairs, and the flowers are smaller.

10. *P. diversifolia* (Lehm.): more or less silky-pubescent with long white hairs; stems ascending; radical leaves 5–7-foliolate; the cauline subsessile (1–2), 3–5-foliolate; all either pinnate with the leaflets much crowded, or pedate, or even palmate; leaflets unequal, cuneiform, incisely toothed or lobed, the lobes silky-villous at the apex; stipules ovate-lanceolate, entire; flowers few or several, on very long divaricate or erect pedicels; petals obcordate, nearly twice the length of the calyx.—*Lehm.! l. c. & in Hook. fl. Bor.-Am.* 1. *p.* 190. P. glaucophylla, *Lehm. delect. sem. Hamb.* 1836? P. campestris, *Nutt.! mss.* P. dissecta? *Nutt. in jour. acad. Philad.* 7. *p.* 20, fide *Nutt.*

Alpine prairies, as well as the higher summits of the Rocky Mountains between lat. 52° & 56°, *Drummond!* Plains of the first chain of the Rocky Mountains called the Black Hills, frequent, *Nuttall!*—Stems 3–12 inches high, many from the same root. Radical leaves on long petioles. Flowers pretty large.—The same specimen frequently presents both pinnate and completely palmate leaves: they are all palmate in our specimens of P. campestris, *Nutt.* and of P. glaucophylla, *Lehm.*, but we observe no other difference.

11. *P. pulchella* (R. Rrown): dwarf; stems procumbent, about 1-flowered; leaves pinnately 3–5-foliolate, silky-tomentose beneath; leaflets pinnatifid, the lower pair smaller and often entire; the lobes lanceolate-linear; stipules sheathing; petals rather longer than the calyx.—*R. Br.! in Ross's voy., & in Parry's 1st voy. suppl. p.* 277; *Hook.! in Parry's 2nd voy. & fl. Bor.-Am.* 1. *p.* 191. P. sericea, *Greville*, ex *R. Br.*

Islands of the Arctic Sea! Arctic shore between the Mackenzie & Coppermine Rivers, *Richardson!*—The style, which is said to be "basi glanduloso-dilatato," has the same structure with numerous species of this section.

* * * *Perennial: leaves palmately 3–7-foliolate.*

† **Flowering stems erect or ascending, not sarmentose.**

12. *P. gracilis* (Dougl.): stem erect, tall, villous-pubescent; leaves palmately 5–7-foliolate, the radical ones on long petioles; the cauline 1–2, often subsessile; leaflets oblanceolate, deeply pinnatifid-serrate with triangular-lanceolate spreading teeth, canescently tomentose beneath; stipules large, ovate-lanceolate, acuminate, entire; cyme fastigiate, loose, the primary branches elongated; petals obcordate, much longer than the ovate-lanceolate very acute or acumiuate segments of the calyx; bracteolar segments linear, shorter.—*Hook.! bot. mag. t.* 2984, *& fl. Bor.-Am.* 1. *p.* 192.

β. flabelliformis (Nutt.! mss.): leaves 5–9-foliolate; leaflets much crowded, deeply pinnatifid; the lobes linear-lanceolate.—P. flabelliformis, *Lehm.! stirp. pug.* 2. *p.* 12, *& in Hook. l. c. t.* 66, *& suppl. Pot. p.* 13, *t.* 6.

Oregon! common. *β.* Plains of the Saskatchawan, *Richardson! Drummond!* Plains of the Oregon (with *α.*), *Nuttall!*—The inflorescence of P. flabelliformis is at length expanded, and the primary branches elongated, as in P. gracilis. The difference between the extreme forms of the two is striking, but numerous intermediate states were found by Mr. Nuttall. The stem is tall and slender, about 2 feet high, and mostly unbranched, except at the summit.

13. *P. fastigiata* (Nutt.! mss.): "canescently silky-tomentose; stem erect, leafy; leaves palmately 5–7-foliolate; leaflets cuneate-oblong, incisely or pinnatifid-serrate; stipules mostly entire; flowers crowded, fastigiate; segments of the calyx lanceolate, the outer ones much smaller; petals obovate, a little longer than the calyx; achenia smooth.

β. "larger, more densely clothed with soft silky hairs.

"Plains of the Rocky Mountains.—Plant 7–8 inches high. Flowers much smaller than in P. rigida." *Nuttall.*

14. *P. rigida* (Nutt.): hirsute with short appressed hairs, and minutely glandular, not canescent; stem erect, stout, leafy; leaves palmately 5–7-foliolate; leaflets cuneiform-oblong; deeply pinnatifid-toothed; the teeth lanceolate-linear, approximate; stipules short, mostly entire; flowers rather crowded; petals broadly obcordate, much longer than the ovate-lanceolate calyx-segments; achenia smooth, slightly margined.—*Nutt.! in jour. acad. Philad.* 7. *p.* 20. P. recta? *Nutt. gen.* 1. *p.* 310. P. chrysantha, *Lehm. in Hook. l. c.?*

On the Missouri, from Fort Mandan to the Rocky Mountains, *Nuttall!* (*Drummond?*)—Resembles P. recta, bnt apparently distinct from that variable species. Dr. Short has sent us specimens of P. recta, which occurs as a weed in his garden, but we do not learn that it is anywhere naturalized in the United States. We find the achenia perfectly smooth in all our European specimens of that species, except when fully mature.

15. *P. Salisburgensis* (Hænke): caudex prostrate, somewhat rooting; stems decumbent at the base, pubescent; radical leaves palmately 5-foliolate; leaflets obovate, glabrous, the margin and veins beneath pubescent with spreading hairs, incisely serrate towards the apex with about 3 spreading teeth on each side of the same length with the terminal one; stipules all ovate [petals obcordate, saffron-color, twice the length of the calyx]; achenia obsoletely rugose. *Koch.—Hænke, in Jacq. coll.* 2. *p.* 68, *& ic. rar.* 3. *t.* 490; *Koch. syn. p.* 216. P. maculata, *Pourret; E. Meyer, pl.*

Labrad. p. 75. P. aurea, *Fl. Dan. t.* 114. P. crocea, *Haller, f. in Schleich. cat.* (1807); *Lehm.! Pot. p.* 111.
Greenland, *Hornemann!* (v. sp. in *herb. Lehm.*)

16. *P. argentea* (Linn.): stems ascending, corymbose at the summit, tomentose; leaves palmately 5-foliolate; leaflets oblong-cuneiform, laciniately pinnatifid or incised, entire towards the base, the margin revolute, glabrous above, canescent beneath; flowers crowded; petals obovate, retuse, longer than the obtusish calyx-segments.—*Linn.! spec.* 1. *p.* 497; *Engl. bot. t.* 289; *Pursh, fl.* 1. *p.* 355; *Torr.! fl.* 1. *p.* 497.
Barren fields and rocky places, Canada! and Northern States! June–Sept.—Stems numerous, 4–10 inches long, rather woody at the base. Flowers small.

17. *P. minima* (Haller, f.): stems ascending, pubescent, mostly 1-flowered; leaves trifoliolate; leaflets obovate, very obtuse, glabrous, but hairy on the margin and the veins of the lower surface, the hairs erect-spreading, incisely serrate towards the apex, with about 4 teeth on each side and a nearly equal terminal one (petals obcordate, longer than the calyx; exterior calyx-segments oval, obtuse, narrowed at the base. *Lehm.*) *Koch.—Haller, f. in Schleich. pl. exsic.* 1. *no.* 59; *Seringe, mus. Helv.* 1. *p.* 51, *t.* 8, *& in DC. l. c.*; *Koch, fl. Germ. & Helv. p.* 218. P. Brauniana, *Hoppe, tausch.*; *Lehm.! Pot. p.* 179, not of *Nestl.* ex *Seringe.*
β. flowering stems very short, but somewhat elongated in fruit.—P. Robbinsiana, *Oakes! mss.*
Alpine region of the White Mountains, New Hampshire, *Nuttall! Mr. Oakes! Mr. Tuckerman!* (*β.*) June–July.—Root fusiform. Leaves and stems crowded, 1–3 inches high. Flowers small.—Our plant agrees well with the character of P. minima (taken chiefly from Koch), and with European specimens.

18. *P. nana* (Lehm.): stem erect, 1-flowered; leaves trifoliolate; leaflets roundish-obovate, obtusely toothed, hairy on both sides or rather canescent beneath; petals obcordate, thrice the length of the calyx; exterior calyx-segments roundish, very obtuse. *Lehm.! Pot. p.* 181, *t.* 17, *& in Hook. l. c.*; *DC. prodr.* 2. *p.* 573.
Labrador, *Kohlmeister!* On the highest Rocky Mountains, *Drummond!* Kotzebue's Sound! &c.—Flowers large. Petioles elongated. This is perhaps the P. emarginata, *Pursh,* which is the oldest name.

19. *P. nivea* (Linn.): villous or tomentose; stems ascending, few-flowered; leaves (mostly radical) palmately 3- (rarely 5-) foliolate; leaflets oval or obovate-cuneiform, pinnatifid-toothed or incised, silky-hirsute or nearly glabrous above, canescent-tomentose beneath; stipules lanceolate, entire; petals broadly obcordate, longer than the acute calyx-segments.—*Vahl. fl. Dan. t.* 1035; *Pursh! fl.* 1. *p.* 353; "*Rottb. in act. Hafn.* 10. *p.* 451, *t.* 7, ex *R. Br.! in Parry's* 1*st voy. appx. p.* 277; *DC.! prodr.* 2. *p.* 572; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 20; *Hook.! l. c.*
β. "leaves sparsely villous and of the same color on both surfaces" [segments of the calyx all very obtuse!] *R. Br. l. c.*; *Hook.! in Parry's 2nd voy. appx. p.* 395. P. frigida? *Grev. in mem. Wern. soc.* 4. *p.* 430, ex *R. Br.* P. Grœnlandica, *R. Br. in Ross's voy.* (*ed.* 2.) 2. *p.* 193. P. verna, *Hook. in Scoresb. Greenl. p.* 431.
γ. stems 1–2-flowered; flowers large; petals very broadly obcordate.—P. hirsuta, *Vahl! fl. Dan. t.* 1390; *DC. l. c.* P. Vahliana, *Lehm.! Pot. p.* 172, *& in Hook. l. c.* P. Jamesoniana, *Grev. l. c. t.* 20, fide *Hook.*
Greenland! and Labrador! Shores and Islands of the Arctic Sea! to Behring's Straits! and along the Rocky Mountains to lat. 52°, and to

Carlton House!—This species varies considerably. Other varieties are described by Hooker in *Bot. mag. fol.* 2982, and by Chamisso & Schlechtendal in *Linnæa*, 2. *p.* 21. P. macrantha, & uniflora of Ledebour are forms of it. Our specimen of var. *β.* from the Arctic Islands (Parry's 2nd voyage) has the very obtuse sepals of P. nana, and indeed wholly resembles that species, except that the petioles are shorter.

20. *P. villosa* (Pallas): densely silky-tomentose; caudex very large and thick; stems ascending, several-flowered; leaves (mostly radical) trifoliolate; leaflets broadly cuneiform, very silky above, densely tomentose-canescent beneath, coarsely toothed towards the apex; stipules ovate, entire; petals obcordate, nearly twice the length of the ovate calyx-segments.—*Pall. in herb. Lamb. ex Pursh, fl.* 1. *p.* 353; *Lehm.! Pot. p.* 166, *t.* 16; *Hook.! fl. Bor.-Am.* 1. *p.* 194. P. lucida, *Willd.! in Berl. mag.* 7. *p.* 296.

Unalaschka, on high mountains, and at Sandwich Sound, *Pallas!* N. W. Coast, *Menzies!* About Behring's Straits, &c. *Chamisso! Capt. Beechey!* Sitcha, *Bongard!* Dundas Island, &c. *Dr. Scouler!* Mount Ranier, *Mr. Tolmie!*—A striking species. Flowering stems 6–10 inches high, 1–2 leaved. Flowers and leaves rather large.

21. *P. biflora* (Lehm.): stem erect, about 2-flowered, leaves trifoliolate, slightly hairy; the terminal leaflet 2-parted, the lateral ones deeply 2-parted; segments linear, entire, ciliate. *Lehm.! conspect. Pot. herb. Willd., & Pot. p.* 192, *t.* 20; *Richards. appx. Frankl. journ. ed.* 2. *p.* 21; *Cham. & Schlecht.! in Linnæa*, 2. *p.* 24; *Hook.! fl. Bor.-Am.* 1 *p.* 195.

Barren grounds from lat 64° to the Shores of the Arctic Sea, *Richardson!* Kotzebue's Sound, *Capt. Beechey!* Island of St. Lawrence, *Chamisso!*—Densely cæspitose. Young leaves rather silky-villous. Petals obcordate, citron-yellow, with an orange-yellow spot on the claw, twice the size of the calyx. Ovaries rugulose. Receptacle densely villous. *Richardson.*

22. *P. flabellifolia* (Hook.! mss.): stem erect, slender, slightly pubescent towards the summit, few-flowered; leaves trifoliolate; leaflets broadly cuneiform, nearly glabrous, entire towards the base, slightly petiolulate, rounded and deeply toothed or incised at the apex with 7–9 mostly equal spreading teeth; stipules oval, membranaceous, entire; pedicels slender; petals broadly obovate, longer than the ovate acute calyx-segments.

Summit of Mount Rainier, Oregon, *Douglas!*—Root thick, descending. Flowering stems about 8 inches high, slender, 1–2-leaved, 3–4-flowered. Leaflets scarcely an inch in length, minutely pubescent and ciliate with short appressed hairs, nearly evenly incisely toothed; the lateral ones mostly dilated and unequal at the base; the terminal decidedly petiolulate. Calyx and pedicels pubescent: bracteolar segments nearly the length of the true ones, oval or obovate, obtuse. Petals apparently yellow. Ovary glabrous: style filiform. Achenia not seen.

23. *P. brevifolia* (Nutt.! mss.): minutely glandular-pubescent, dwarf; stems slender, nearly erect, few-flowered; leaves trifoliolate; leaflets roundish or slightly cuneiform at the base, 2–3-lobed, crenately toothed, the terminal one distinctly petiolulate; stipules ovate, mostly entire; petals obovate, scarcely longer than the ovate-lanceolate calyx-segments; achenia even.

"Near the summit of mountains, within the perpetual snow line, near Goodier River of the Oregon. Root dark brown, very long, and thickly clad with stipular vestiges. Whole plant not more than 2–3 inches long, turning blackish in drying. Flowers small, pale yellow. A very distinct species." *Nuttall!*—The terminal leaflet is so distinctly petiolulate and often deeply 3-lobed, that the leaf might be said to be pinnate, with the three upper leaflets confluent, and so Mr. Nuttall has described it in his manuscript notes. But its resemblance to P. flabellifolia renders it proper to characterize it as above. It is not more than half the size of that species; the leaflets and flowers also much smaller, the pedicels short, the minute pubescence wholly glandular, &c.

24. *P. concinna* (Richards.): stems short, few-flowered; radical leaves palmately 5–7-foliolate; leaflets cuneate-obovate, serrate at the apex, densely tomentose and white beneath; petals obcordate, exceeding the calyx. *Lehm.—Richards.! appx. Frankl. journ. ed.* 2. *p.* 20; *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 193, *t.* 67.

Plains of the Saskatchawan about Carlton House, *Richardson! Drummond!*—Stems numerous from the same root, 2–3 inches high, diffuse, silvery-tomentose or silky. Cauline leaves 1–2. Leaflets 3–5 lines long, pale green and somewhat silky above; the lateral ones often entire. Peduncles 2–3, slender. Ovaries smooth. Receptacle hirsute.—Apparently very near P. humifusa, *Nutt.*, and perhaps only a state of that plant.

† † **Flowering stems prostrate or sarmentose: pedicels solitary, axillary (or radical), elongated, 1-flowered.**

25. *P. humifusa* (Nutt.): somewhat cæspitose; leaves all radical, palmately 5-foliolate; leaflets cuneate-oblong, obtuse, incisely toothed, white and tomentose beneath, green and pubescent above; flowering stems short and filiform, procumbent, flagellate, but not creeping, leafless, few-flowered. *Nutt. gen.* 1. *p.* 310.

On high gravelly hills near Fort Mandan, Missouri, *Nuttall.*—Flowering stems 4–5 inches long.—We have seen no specimens of this apparently very distinct species.

26. *P. Canadensis* (Linn.): hirsute-pubescent; stems sarmentose, procumbent and ascending; leaves palmately 5-foliolate; leaflets obovate-cuneiform, silky beneath when young, incisely serrate-toothed towards the apex; stipules entire or 2–3-cleft; pedicels axillary, solitary, elongated; calyx-segments ovate-lanceolate, shorter than the lanceolate bracteolar segments, and rather shorter than the broadly obovate or obcordate petals; achenia somewhat rugose.—*Linn.! spec.* 1. *p.* 498; *Michx.! fl.* 1. *p.* 303; *Nestl. Pot. t.* 10, *f.* 1; *Lehm.! Pot. p.* 118; *Torr.! fl.* 1. *p.* 426; *Ell. sk.* 1. *p.* 573; *DC. prodr.* 2. *p.* 575; *Darlingt. fl. Cest. p.* 303. P. sarmentosa, *Willd.! enum.* 1. *p.* 554; *Bigel.! fl. Bost. ed.* 2. *p.* 204.

β. *pumila:* very small.—P. pumila, *Poir. dict.* 5. *p.* 594; *Pursh, fl.* 1. *p.* 354.

γ. *simplex:* less hirsute; stems erect or ascending at the base, often sarmentose towards the apex; leaflets cuneiform-oblong, at length nearly glabrous above.—P. simplex, *Michx.! l. c.; Nestl. l. c. t.* 9, *f.* 2; *Lehm.! l. c.; Ell. l. c.; DC.! prodr.* 2. *p.* 575; *Darlingt. l. c.* P. Caroliniana, *Poir. l. c.*

Dry fields and border of woods, Canada! to Georgia, and west to Arkansas! April–Aug.—P. pumila is a starved state of P. Canadensis, growing in very sterile soil. P. simplex is a more luxuriant summer state of the same species, growing in richer soil or shady places; when the stems often attain the length of 2 feet or more, and the leaves become larger, more membranaceous, and less pubescent; but the radical ones resemble those of the ordinary P. Canadensis. We have an imperfect specimen from Arkansas, which presents the leaves of the var. simplex, except that the upper one is trifoliolate, and the plant is very hirsute.—*Cinque-foil. Five-Finger Barren Strawberry.*

27. *P. Durandii:* hirsute-pubescent; stems procumbent, sarmentose; leaves 3-foliolate; leaflets roundish, incisely crenate-toothed, hirsute with appressed hairs, especially beneath; stipules ovate, entire; pedicels axillary, solitary, elongated, petals obovate, rather longer than ovate acute or acuminate calyx-segments; bracteolar segments larger and foliaceous, 2–4-toothed or incised; achenia. . . . . .

Georgia, *Mr. Durand!*—Leaflets about half an inch in length and breadth, obtuse and entire at the base, incisely crenate with 11–13 approximate equal teeth, with scattered short appressed hairs, particularly on the veins. Flowers large. Ovaries glabrous: style filiform, elongated. Fruit not seen.—The bracteoles, which are large and toothed like the leaflets, are perhaps in an abnormal state in our single specimen; but the plant is quite different from any species with which we are acquainted.

28. *P. nemoralis* (Nestl.): petals, calyx-segments, and bracteoles usually 4; stems filiform, procumbent; leaves palmately 3-foliolate, the lowest mostly 5-foliolate; the cauline ones petioled; leaflets obovate-cuneiform, incisely toothed towards the apex; stipules entire or toothed; flowers solitary on long axillary pedicels; petals obcordate, longer than the calyx; achenia striate-rugose.—*Nestl. Pot. p.* 65; *Lehm.! Pot. p.* 147, *t.* 13. P. Tormentilla, var. nemoralis, *Seringe! in DC. prodr.* 2. *p.* 574. Tormentilla reptans, *Linn.; Engl. bot. t.* 864.

Labrador! (v. sp. in *herb. Hook.*)

29. *P. opaca* (Linn.): stems decumbent, filiform; lower leaves palmately 5–7-foliolate; leaflets narrowly cuneiform; very deeply serrate, pilose on both sides; petals obcordate, equalling the calyx. *Lehm.*—*Jacq. ic. rar. t.* 91; *Pursh, fl.* 1. *p.* 355; *Lehm. Pot. p.* 105.

Labrador ex *Pursh.* May–June.—Flowers small.

§ 2. *Style inserted below the middle of the ovary: seed ascending, amphitropous or nearly orthotropous.*

* *Style inserted scarcely below the middle of the ovary, filiform; seed amphitropous: carpels glabrous, very villous at the insertion (receptacle very villous: stems creeping and proliferous: pedicels solitary, very long, 1-flowered).*—Anserina.

30. *P. Anserina* (Linn.): creeping; ascending stem none; stolons slender, rooting and proliferous; leaves pinnate; leaflets 9–19, with several minute pairs interposed, oblong, sharply pinnatifid-serrate, nearly glabrous above, silvery-canescent beneath; stipules multifid; pedicels scape-like, solitary, as long as the leaves.—*Linn.! spec.* 1. *p.* 495; *Michx.! l. c.; Lehm.! Pot. p.* 71; *DC.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 189.

β. grandis: leaves very large (12–20 inches long), 21–31-foliolate.

γ. Grœnlandica (Hook.): very small and slender, nearly glabrous; leaflets oval or obovate, 5–7, silvery beneath, often reddish above.—*Hook.! in Parry's 3d voy. appx. p.* 125.

δ. Egedii: very small; leaflets glabrous and greenish on both sides; stipules entire; pedicels longer than the leaves.—P. Egedii, *Wormsk. fl. Dan.* 9. *t.* 1578; *Lehm.! l. c.*

Banks of streams, &c., Pennsylvania! and New England States! to Arctic America! west to Oregon! and California! *β.* Oregon, *Dr. Scouler! γ.* Greenland, and Whale-Fish Islands! Sandy borders of brackish ponds, Massachusetts, *Dr. Pickering! Mr. Oakes! δ.* Greenland! June–Sept.—Flowers large. Widely dispersed throughout the colder portion of the whole

Northern hemisphere, and presenting, in consequence, many varieties. The variety from Oregon is extremely large in all its parts; the pedicels are often a foot long; and the root is said to be eaten by the natives.—*Silverweed.*

* * *Style filiform, inserted below the middle of the ovary: seed amphitropous or almost orthotropous: carpels and receptacle clothed with very long villous hairs.*—Comocarpa.

31. *P. fruticosa* (Linn.): shrubby, much branched; leaves pinnately 5–7-foliolate, on short petioles; leaflets crowded, oblong-lanceolate, entire, silky especially beneath; stipules scarious; petals (yellow) nearly orbicular, longer than the calyx.—*Linn.! spec.* 1. *p.* 495; *Willd.! spec.* 2. *p.* 1094; *Michx.! fl.* 1. *p.* 304; *Nestl. Pot. t.* 1; *Engl. bot. t.* 88; *Pursh! fl.* 1. *p.* 355; *Lehm.! l. c. p.* 31; *DC.! prodr.* 2. *p.* 579; *Hook.! fl. Bor.-Am.* 1. *p.* 186. P. floribunda, *Pursh! l. c.*

Bog meadows, and along streams, Arctic America! Newfoundland! and Kotzebue's Sound! to Canada! and the Northern States! Also along the Rocky Mountains to lat. 42°, *Dr. James!* June–Sept.—Shrub 2–3 feet high, with large flowers terminating the numerous branchlets. Leaves very variable in size. Disk, receptacle, and achenia extremely villous with very long stiff hairs.

32. *P. tridentata* (Ait.): stems woody and creeping at the base, branched; flowering stems ascending; leaves palmately trifoliolate; leaflets oblong-cuneiform, 3-toothed at the apex, nearly glabrous and somewhat shining above, pale and minutely pubescent beneath; stipules lanceolate; petals (white) obovate-oblong, nearly twice the length of the calyx.—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 216, *t.* 9; *Michx.! fl.* 1. 304; *Engl. bot. t.* 2389; *Lehm.! l. c.*; *Torr.! fl.* 1. *p.* 495; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 195. P. retusa, *Retz*; *Fl. Dan. t.* 799, & 1875.

Greenland! Labrador! Newfoundland! and Canada! to the mountains of the New England States! New York! and the higher peaks in Virginia and North Carolina, and from Lake Superior! to lat. 64°. June–July.—Stems 4–10 inches high. Flowers small, few. Achenia roundish-ovoid, at length rather sparsely villous.

* * * *Style fusiform, attenuate at the base, fleshy or apparently glandular, large, rather persistent: seed nearly orthotropous: carpels glabrous.*—CLOSTEROSTYLES.

P. rupestris belongs to this section, but the style is less thickened than in P. arguta.

33. *P. arguta* (Pursh): stem erect, very pubescent, villous and viscid at the summit, as also the peduncles and calyx; radical leaves pinnately 7–9-foliolate, on long petioles; the cauline ones few, 3–7-foliolate; leaflets roundish, ovate, or somewhat rhomboid, oblique at the base, incised or doubly serrate, pubescent especially beneath; stipules toothed or entire; flowers in a more or less crowded terminal cyme; segments of the calyx ovate, acute, shorter than the roundish-obovate yellowish-white petals; disk glandular, thickened, somewhat 5-lobed.—*Pursh! fl.* 2. *p.* 636; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 20; *Lindl.! bot. reg. t.* 137; *Hook. fl. Bor.-Am.* 1. *p.* 186, *t.* 63. P. confertiflora, *Torr.! fl.* 1. *p.* 449; *Lehm.! stirp. pug.* 3. *p.* 24. P. Pennsylvanica β. arguta, *Torr.! in ann. lyc. New York*, 2. *p.* 197, not of *DC.* Geum agrimonioides, *Pursh! fl.* 1. *p.* 351. Boottia sylvestris, *Bigel.! fl. Bost. ed.* 2. *p.* 351.

Hills and dry banks of streams, Canada! (from lat. 65°, *Richardson*) to Pennsylvania! Illinois! Missouri! and west to the Rocky Mountains in lat. 42°, *Dr. James;* June–July. Stem mostly simple 1–2 and often 3–4 feet high, stout, clothed with a soft brownish pubescence, which is glutinous when young. Flowers aggregated in usually dense clusters at the extremity of the dichotomous branches of the cyme; the alar flowers on rather slender pedicels. —The petals are white or ochroleucous, not yellow as is sometimes stated. The figure of Hooker is excellent, except that it does not well represent the disk of our plant. It better represents that of the very nearly allied P. glandulosa, to which the Oregon plant cited in that work belongs. This species varies greatly in size.

34. *P. fissa* (Nutt.! mss.): "viscidly pubescent; stem erect, branching, leafy; leaves pinnately 9–11-foliolate, on short petioles; leaflets unequal, roundish or oval, deeply incised or incisely toothed, the teeth entire; stipules entire or toothed; flowers rather crowded; segments of the calyx ovate, acute, shorter than the roundish (sulphur-yellow) petals."

β. major: larger in all its parts; flowers more crowded.—P. arguta, *Nutt.! in jour. acad. Philad.* 7. *p.* 21, not of *Pursh*. P. glutinosa, *Nutt.! mss.*

Plains of the Rocky Mountains towards the Oregon, *Nuttall!* July. *β.* Head waters of the Oregon, *Capt. Wyeth!*—" Stem about a span high. Leaflets small, the lower ones roundish; those of the upper cauline leaves ovate. External sepals much smaller, often toothed. Flowers rather large." *Nutt.*—The plant which we have joined as a variety of this species seems to be a larger plant, and bears more resemblance to P. arguta.

35. *P. glandulosa* (Lindl.): stem erect, branched above, villous-pubescent, viscid towards the summit, as also the peduncles and calyx; radical leaves pinnately 5–9-foliolate; leaflets ovate or roundish, those of the nearly sessile cauline leaves obovate or oblong, all deeply and usually doubly serrate-toothed and often incised; stipules mostly entire; branches of the cyme elongated and rather loosely-flowered; segments of the calyx ovate, acute, as long as the broadly oval (yellow) petals.—*Lindl.! bot. reg. t.* 1583; *Hook. & Arn.! bot. Beechey, suppl. p.* 338. P. Oregana, *Nutt. mss.* P. arguta, *Hook. fl. Bor.-Am.* partly.

β. incisa (Lindl.): leaflets incised; petals longer than the calyx.—*Lindl. bot. reg. t.* 1973.

Oregon and California, *Douglas! Nuttall!*—Flowers about half the size of those of P. arguta; the stem more slender and branching. The staminiferous disk is conspicuous, but not glandular.

‡ *Doubtful or little-known Species.*

36. *P. emarginata* (Pursh): assurgent, hirsute; stipules ovate, entire; leaves trifoliolate; leaflets sessile, approximate, incisely toothed, hirsute on both sides; pedicels few, terminal, elongated, 1-flowered; petals cuneate-oblong, emarginate, twice the length of the calyx. *Pursh, fl.* 1. *p.* 353.

Labrador, *Kohlmeister.*—A small species. Flowers large in proportion. *Pursh.*—This species has not been identified. It may be, as Hooker suggests, the P. nana of Lehmann, which Hooker found among the plants collected by Kohlmeister. But E. Meyer (*pl. Labrad. p.* 74) has described under this name a plant apparently different from P. nana.

37. *P. dissecta* (Pursh): erect, branched, rather glabrous; leaves digitately 5-foliolate; leaflets pinnatifid; the lobes entire, acute; flowers terminal, somewhat corymbose. *Pursh, fl.* 1. *p.* 355.

Near Hudson's Bay. Perennial.—Described by Pursh from a specimen in the Banksian herbarium.

38. *P. pentandra* (Engelmann, mss.): hirsute; stem erect (3–4 feet high); lower leaves palmately 5-foliolate, on long petioles; the upper leaves 3-foliolate, on short petioles; leaflets oblanceolate, obtuse, cuneate at the base, coarsely and often doubly toothed, pubescent beneath, hairy above; stipules lanceolate, acute, incisely toothed; flowers (very small) in large dichotomous cymes; peduncles filiform, hirsute; segments of the calyx longer than the spatulate (pale yellow) petals, and shorter than the bracteolar segments; stamens 5–6; achenia very small, smooth.

Shady moist places, near Fort Gibson, Arkansas. June.—This species we have not seen: the description is furnished by Dr. Engelmann. The habit of the plant is said to be like P. recta, but the flowers more like P. supina.

21. COMARUM. *Linn. gen. p.* 257; *Lam. ill. t.* 444.

Calyx flat, deeply 5- (rarely 6–7-) cleft, colored within, with as many much smaller alternate deflexed bracteoles. Petals 5, ovate-lanceolate, acute or acuminate, very small, somewhat persistent. Stamens numerous, inserted into the thickened and hairy slightly lobed disk which lines the bottom of the calyx: filaments subulate, persistent. Achenia aggregated on the convex, at length very large and fleshy or spongy, hairy persistent receptacle: styles filiform, at length deciduous, inserted below the apex of the ovary: stigmas simple. Seed inserted next the insertion of the style, pendulous. Radicle superior.—A perennial herb, creeping at the base, with pinnate leaves. Stipules of the lower leaves scarious and wholly adnate to the petiole. Petals, stamens, and styles, as well as the upper side of the sepals, dark purple.

C. palustre (Linn.!)—*Fl. Dan. t.* 636; *Michx.! fl.* 1. *p.* 302; *Engl. bot. t.* 172; *Pursh! fl.* 1. *p.* 156; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 21; *Bigel.! fl. Bost. ed.* 2. *p.* 203. Potentilla palustris, *Scopoli, fl. Carn.* (*ed.* 2.) 1. *p.* 359; *Lehm.! Pot. p.* 52; *Torr.! fl.* 1. *p.* 498; *DC.! prodr.* 2. *p.* 583; *Hook.! fl. Bor.-Am.* 1. *p.* 187. P. Comarum, *Nestl.*

In sphagnous swamps, Northern States! and Canada! Labrador! and Greenland! to the Arctic Circle, Kotzebue's Sound! &c. June–July.—Root astringent. Stems 1–2 feet high. Leaflets 5–7, crowded, lanceolate-oblong, mostly obtuse, minutely silky. Flowers large. Segments of the calyx ovate, acuminate. Achenia glabrous.—*Marsh Cinque-foil.*

22. FRAGARIA. *Tourn.*; *Linn. gen. p.* 255.

Calyx, corolla, and stamens the same as in Potentilla. Achenia dry, scattered on the enlarged succulent or pulpy receptacle, which at length often separates from the conical central portion of the torus: styles deeply lateral, attenuate at the insertion, rather thickened upwards: stigma depressed. Seed inserted next the base of the style, amphitropous, ascending. Radicle superior.—Perennial stoloniferous herbs, with trifoliolate leaves; the leaflets coarsely toothed. Scapes cymosely several-flowered. Petals (mostly) white. Receptacle red, or whitish; when ripe, edible.—*Strawberry.*

1. *F. Virginiana* (Ehrh.): fruit roundish-ovoid; the achenia imbedded in the deeply pitted receptacle; calyx spreading in fruit; peduncles com-

monly shorter than the (rather coriaceous) leaves; the direction of the pubescence variable.—*Ehrh. beitr.* 7. *p.* 24; *Willd.! spec.* 2. *p.*1091; *Pursh, fl.* 1. *p.* 357; *Torr.! fl.* 1. *p.* 500; *Seringe! in DC. prodr.* 2. *p.* 570; *Hook.! fl. Bor.-Am.* 1. *p.* 184; *Darlingt. fl. Cest. p.* 304. F. Canadensis, *Michx.! fl.* 1. *p.* 299; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 20. F. glabra &c., *Duham. arb.* 1. *p.* 181, *t.* 5. F. vesca, var. Virginiana, *Ait. Kew.* (*ed.* 1.) 2. *p.* 211.

Fields and meadows throughout the United States (in the South common only in the woody and somewhat elevated districts) and Canada! extending to Newfoundland! and to Arctic America, lat. 64°, *Richardson!* April–May.—The deeply pitted fruit affords the only character for this species that can be wholly relied upon. The pubescence is sometimes appressed or ascending on both the petioles and the peduncles, but as often spreading on one or both: and neither is the length of the peduncles, or the firm texture of the leaves very constant. F. elatior was doubtless erroneously given by the older authors as an American species. F. Virginiana and F. Canadensis were both manifestly founded upon the species here described.—*Wild Strawberry.*

2. *F. vesca* (Linn.): fruit conical or hemispherical, the achenia superficial; calyx much spreading or reflexed in fruit; peduncles commonly longer than the leaves; the direction of the pubescence variable.—*Linn.! spec.* (excl. *var.*); *Engl. bot. t.* 1524; *DC.! l. c.*; *Hook. l. c.*

β. fruit elongated-conic, acute.

γ. "leaves and scapes usually more silky." *Nutt.! mss.*

Northern States! Subarctic America and the N. W. Coast! γ. Oregon, *Douglas! Nuttall!* May.—This species is certainly native in the northern portions of the United States; the variety with narrow and elongated fruit is common in the northern portions of New York and the New England States. The species, though generally confounded with the preceding, is readily distinguished by the carpels not being imbedded in the receptacle. ~~It is also more stoloniferous.~~

3. *F. Chilensis* (Ehrh.): flowers (large) spreading; leaflets coriaceous, broadly obovate, very obtuse, coarsely serrate, rugose, very silky-villous beneath; peduncles and calyx silky. *Hook.*—*Ehrh. l. c.*; *Willd.! l. c.*; *Seringe, in DC. prodr.* 2. *p.* 571; *Cham. & Schlecht.! in Linnæa,* 2. *p.* 20; *Hook.! l. c., & in bot. Beechey, p.* 140. F. sericea, *Dougl. mss.* ex *Hook.* F. Chiloensis &c. *Dill. Elth. t.* 120. (cult.) F. vesca, var. Chiloensis, *Linn.*

β. "peduncles longer than the leaves, many times dichotomous, with a pedicel in the axils." *Hook. l. c.*

γ. peduncles 1-few-flowered, often shorter than the leaves; leaflets smaller and less silky, more cuneiform.—F. Chilensis, α. (in part), *Hook.! l. c.* F. Californica, *Cham. & Schlecht. l. c.* F. cuneifolia, *Nutt.! mss.*

Western Coast from Puget Sound! to California!—Mr. Nuttall's specimens have smaller flowers and more acuminate sepals; but corresponding ones from Dr. Scouler have very large and mostly solitary flowers. The fruit, according to Mr. Nuttall, "is smaller than in F. Virginiana, and although palatable, the pulp is so covered with villous hairs as to render it as uncomfortable to the palate as a woolly peach."

Subtribe 6. **Dalibardeæ.**—Calyx flattish, 5-parted, mostly imbricate in æstivation. Stamens numerous. Carpels numerous, or rarely few, drupaceous, juicy, crowded on the conical receptacle: ovules 2, collateral: styles terminal or nearly so. Seed suspended. Radicle superior.—Herbaceous or mostly somewhat shrubby often prickly plants.

23. DALIBARDA. *Linn.; Richards. in Nestl. Pot. p.* 16, *t.* 1; *DC. prodr.*

Calyx concave at the base, deeply 5–6-parted; the segments imbricate in æstivation: three of them larger and 3–5-toothed or serrate. Petals 5, sessile, deciduous. Stamens numerous, inserted into the border of the disk: filaments filiform, deciduous. Ovaries 5–10, with 2 collateral suspended ovules, one of them abortive: styles filiform, deciduous: stigma nearly simple. Achenia 5–10, dry or slightly drupaceous (the endocarp cartilaginous), sessile in the bottom of the calyx. Seed suspended. Radicle superior: cotyledons thick.—Small perennial herbs, with creeping stems, and roundish-cordate crenate leaves, on slender petioles. Scapes 1–2-flowered. Petals white.

1. *D. repens* (Linn.): diffuse, creeping, pubescent; hairs of the petioles reflexed; stipules setaceous; sepals spreading in flower, converging in fruit, not bristly; young ovaries villous-tomentose.—*Linn.! spec.* 1. *p.* 491; *Pursh! fl.* 1. *p.* 350; *Torr.! fl.* 1. *p.* 491; *DC.! prodr.* 2. *p.* 564; *Hook.! fl. Bor.-Am.* 1. *p.* 184. D. violæoides, *Michx.! fl.* 1. *p.* 299, *t.* 27. Rubus Dalibarda, *Linn.! spec. ed.* 2; *Smith! ic. ined. t.* 20; *Willd.! spec.* 2. *p.* 1090.

Moist shady places, Canada! and New England States! New York! and Pennsylvania! June–Aug.—Petals ovate, obtuse, twice the length of the calyx. Achenia white, nearly glabrous when old. The specific name of Michaux is very expressive of the habit of the plant.—D. calycina of Nepaul is a congener of our species: D. geoides doubtless is not. The genus differs essentially from Rubus (in which the ovaries are occasionally few in number) only in the nearly dry achenia.

24. RUBUS. *Tourn.; Linn. gen. p.* 254; *Lam. ill. t.* 441.

Calyx concave or flattish at the base, 5-parted, without bracteoles; the segments mostly imbricate in æstivation. Petals 5, deciduous. Stamens numerous, inserted into the border of the disk. Ovaries numerous (very rarely few), with 2 collateral suspended ovules in each cell, one of which is abortive: styles terminal or nearly so, filiform, deciduous; stigma simple or obtuse. Achenia pulpy and drupaceous, aggregated on a conical or cylindrical spongy receptacle, either persistent or deciduous. Radicle superior.—Perennial mostly suffruticose or shrubby plants, with erect or procumbent mostly prickly and biennial stems. Leaves pinnately or pedately compound, often simple. Flowers white or reddish (inflorescence centrifugal). Fruit eatable.—*Raspberry, Blackberry, &c.*

§ 1. *Carpels forming a somewhat hemispherical fruit, concave beneath and falling away from the dry receptacle when ripe, sometimes few in number and falling away separately.*—(Raspberry.)

* *Leaves simple (flowers large).*

1. *R. odoratus* (Linn.): hispid with glandular hairs, especially the peduncles and calyx; stem shrubby, branched; leaves large, 3-lobed (the lower

ones 5-lobed), the middle lobe prolonged, all acute or acuminate, mucronately serrulate-toothed; stipules nearly free, deciduous; peduncles many-flowered, compound; flowers very large; sepals appendiculate with a very long cusp, shorter than the obovate-orbicular (purplish rose-color) petals; fruit very broad and flat.—*Linn.! spec.* 1. *p.* 494; *Michx.! fl.* 1. *p.* 297; *Bot. mag. t.* 150; *Ell. sk.* 1. *p.* 570; *Torr.! fl.* 1. *p.* 490; *Seringe! in DC. prodr.* 2. *p.* 566; *Bart. fl. N. Amer. t.* 42; *Audub. birds of Amer. t.* 133; *Hook.! fl. Bor.-Am.* 1. *p.* 183; *Darlingt. fl. Cest. p.* 309.

Rocky places, Canada, as far north as the Saskatchawan! and Northern States! to the mountains of Georgia! June–Aug.—Stem erect, 3–4 feet high. Leaves pubescent beneath, cordate at the base. Peduncles and upper part of the stem &c. densely clothed with purplish very clammy glandular hairs. Cusps of the calyx as long as the segments, sometimes dilated. Fruit yellowish, or red when mature, well-flavored, but many of the carpels usually abortive.—*Rose-flowering Raspberry.*

2. *R. Nutkanus* (Moçino): slightly hirsute with glandular hairs, naked below; stem shrubby, flexuous; leaves 5-lobed; the lobes nearly equal, broad, unequally and coarsely toothed; stipules somewhat adnate to the petiole and united with each other; peduncles rather few-flowered; flowers very large; sepals glandular but not hispid, with very long cusps, scarcely the length of the broadly oval (white) petals.—*Moçino, pl. Nutk. ic.*; *Seringe, in DC. l. c.*; *Lindl.! bot. reg. t.* 1368; *Bongard! veg. Sitcha, l. c. p.* 131; *Hook.! bot. mag. t.* 3453, *& fl. Bor.-Am. l. c.*; *Don, in Brit. fl. gard.* (*ser.* 2) *t.* 83.

β. Nuttallii: flowers mostly smaller; petals longer than the calyx.—R. parviflorus, *Nutt.! gen.* 1. *p.* 309.

North West Coast, from lat. 51°, *Menzies!* Nootka, *Moçino!* (ex icon.) to Oregon, *Douglas! Dr. Scouler! Nuttall!* and California in lat. 43°, extending to mountain woods east of the Rocky Mountains, *Drummond! β.* Island of Michilimackinack, *Nuttall!* Shore of Lake Superior, rather abundant, *Dr. Pitcher! Dr. Houghton!* June–July.—Resembles R. odoratus, but readily distinguished by the characters pointed out: it is also more slender, often 4 to 10 feet high on the coast, but in the Rocky Mountains it dwindles to 12–18 inches, according to Douglas and Drummond. Fruit red. Petals often crenulate or emarginate.—Specimens from the Rocky Mountains wholly agree with Mr. Nuttall's R. parviflorus, of which fine specimens, with very large flowers, have been sent us by Dr. Houghton.

3. *R. deliciosus* (Torr.): stem shrubby, branched, erect; the branches, young leaves, and calyx tomentose-pubescent, not glandular; leaves reniform-orbicular, rugose, slightly 3–5-lobed, finely serrate-toothed; stipules persistent; peduncle 1–7-flowered; sepals oval-oblong, with a dilated acumination, shorter than the (purple) oval petals.—*Torr.! in ann. lyc. New York*, 2. *p.* 196.

Rocky Mountains, in about lat. 41°, *Dr. James!*—Leaves about 2 inches in diameter. Flowers smaller than in R. odoratus. Fruit, according to Dr. James, large and delicious.

4. *R. velutinus* (Hook. & Arn.): stem shrubby, unarmed, erect, flexuous, pubescent, naked at the base; leaves large, deeply cordate, acutely 5-lobed, serrate, reticulated, densely tomentose-pubescent, paler and velvety beneath; stipules ovate, acuminate, silky; corymbs few-flowered; calyx velvety; sepals obtuse, with a long cusp, shorter than the (white) corolla. *Hook. & Arn.! bot. Beechey, p.* 140.

St. Francisco, California! (v. sp. in *herb. Hook.*)

5. *R. vitifolius* (Cham. & Schlecht.): stem shrubby; branches aculeate-

pruinose, puberulent; peduncles, calyx, and veins of the leaves aculeate with straight weak and somewhat reflexed prickles; leaves 3-lobed, unequally serrate, nearly glabrous; lobes acute, the lateral ones diverging, the middle one longest; stipules setaceous, hairy; flowers terminal, on somewhat corymbose branches; sepals lanceolate, the apex produced into a very long linear or dilated and somewhat foliaceous acumination, longer than the obovate petals. *Cham. & Schlecht. in Linnæa*, 2. *p.* 10.

St. Francisco, California, *Chamisso.*—No other collector seems to have found this species. It is said to be canescent when young, and the filaments equal the petals in length.

6. *R. Chamæmorus* (Linn.): diœcious; stem nearly herbaceous, creeping at the base, simple, 1-flowered; leaves cordate-reniform, somewhat plicate and rugose, 5-lobed, serrate; the lobes short and rounded; stipules ovate, obtuse; sepals ovate, obtuse, shorter than the spreading obovate (white) petals; fruit red, very large.—*Linn.! fl. Lapp. p.* 163, *t.* 5, *f.* 1, & *spec.* 1. *p.* 494; *Engl. bot. t.* 506; *Michx.! fl.* 1. *p.* 298; *Pursh! fl.* 1. *p.* 349; *DC.! l. c.*; *Hook.! l. c.*

In sphagnous swamps, throughout Arctic America, from Greenland! to Behring's Straits! and Unalaschka! and from the shores of the Arctic Sea to Newfoundland! Labrador! Lake Winipeg! and on the Rocky Mountains in lat. 52°. Also at Lubeck, Maine (about lat. 44°,) *Mr. Oakes!* and on the White Mountains of New Hampshire, *Oakes!* June–July.—Flower large. Fruit large, delicious, composed of few and large carpels, ripe in August.

7. *R. stellatus* (Smith): stem herbaceous, simple, 1-flowered, leaves cordate, rugose, deeply 3-lobed or 3-parted, serrate; stipules ovate, obtuse; peduncle short; segments of the calyx linear-subulate; petals (red) oblong, erect. *Hook.*—*Smith! ic. ined. t.* 64; *Pursh! fl.* 1. *p.* 349; *Hook.! fl. Bor.-Am.* 1. *p.* 183. R. stenopetalus, *Fisch. in Choris, voy. pitt. p.* 10, fide *Bongard.*

N. W. Coast, near Foggy Harbor, *Menzies!*—Resembles R. arcticus except in the division of the leaves. E. Meyer (*pl. Labrad.*) refers it to R. Chamæmorus, but erroneously.

8. *R. nivalis* (Dougl.): small, frutescent; leaves cordate, 3-lobed, sharply toothed, glabrous, the petioles and veins of the leaves armed with recurved prickles; stipules ovate, acute; peduncles short, 2-flowered; segments [of the calyx?] lanceolate, hairy. "*Dougl. mss.*" ex *Hook. l. c.*

On the high snowy ridges of the Rocky Mountains.—Fruit red. Flowers red? Seeds few, large, and wrinkled. A low species, not more than 6 inches high. *Douglas, l. c.*—Hooker has no specimen of this plant. Perhaps it is a species of the succeeding section, with the leaflets confluent, which is sometimes the case.

* * *Leaves (pinnately or pedately) 3–5-foliolate.*

† Stems mostly herbaceous and annual (fruit usually of few grains).

9. *R. arcticus* (Linn.): stem low, herbaceous, sometimes diœcious, unarmed, somewhat pubescent; mostly erect, 1–2-flowered; leaves trifoliolate; leaflets rhombic-ovate or obovate, coarsely and often doubly serrate, petiolulate; stipules ovate; sepals lanceolate, acute, often shorter than the obovate entire or emarginate (reddish) petals.—*Linn.! fl. Lapp. p.* 162, *t.* 5, *f.* 2, & *spec. l. c.*; *Fl. Dan. t.* 488; *Engl. bot. t.* 1585; *Bot. mag. t.* 132; *Pursh! fl.* 1. *p.* 349: *DC.! l. c. Cham. & Schlecht.! l. c.*; *E. Meyer, pl. Labrad. p.* 79; *Hook.! fl. Bor.-Am.* 1. *p.* 182.

β. stem shorter; petals obovate-oblong; sepals rather narrower.—R. acaulis, *Michx.! fl.* 1. *p.* 298; *Hook.! l. c.* R. pistillatus, *Smith! exot. bot.* 2. *p.* 53, *t.* 86; *Pursh! l. c.*

γ. stem flagelliform, erect at the apex (sometimes 2-flowered).—R. propinquus, *Richards. appx. Frankl. journ. ed.* 2. *p.* 19.

Throughout Arctic America from Greenland! &c. to Kotzebue's Sound! Also Labrador! Newfoundland! Saskatchawan in lat. 53°, and Rocky Mountains!—"Berries amber, very delicious," *Pursh.* (The fruit seldom ripens in Lapland.)—The remarks of Chamisso and of E. Meyer are confirmed by the specimens before us. The pistils, according to the latter, are approximate in the sterile plant, and the filaments somewhat dilated.

10. *R. pedatus* (Smith): stem creeping and flagelliform, branching from the base, herbaceous, filiform; leaves 3-foliolate, or pedately 5-foliolate by the division of the two lateral leaflets, membranaceous, nearly glabrous; leaflets obovate, incised and serrate; stipules roundish, scarious, persistent; peduncles filiform, mostly bibracteate, 1-flowered; sepals ovate-lanceolate, entire or serrate-incised, at length reflexed, nearly the length of the obovate-oblong often crenulate sessile (white) petals; carpels 3–6, large and pulpy (red) in fruit.—*Smith! ic. ined. t.* 63; *Pursh! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 181, *t.* 62. Dalibarda pedata, "*Steph. mem. soc. Mosc.*" Comaropsis pedata, *DC. prodr.* 2. *p.* 555; *Bongard! veg. Sitcha, l. c. p.* 134.

On prostrate trunks of rotten trees, in shady woods, &c. N. W. Coast, *Menzies! Eschscholtz! Mr. Tolmie!* Sitcha, *Bongard!* Oregon, *Douglas! Dr. Scouler!* and in the Rocky Mountains between lat. 52° and 56°, *Drummond!*—Differs from the present genus only in the few carpels, and in wanting the protuberant receptacle; and from Dalibarda only in the pulpy fruit and divided leaves: but several species of Rubus of very different habit among themselves also have the carpels reduced to about 6 or 8. It differs essentially from Comaropsis. There are 2 suspended ovules in each ovary, one of which is abortive, as in the rest of the genus.

11. *R. saxatilis* (Linn.): herbaceous; flowering stems simple, erect; stolons prostrate and sterile; leaves 3-foliolate, on long petioles, somewhat pubescent; leaflets rhomboid-ovate, mostly obtuse at both ends; peduncle 3–8-flowered; pedicels short, and, with the calyx, pubescent, but not glandular; sepals at length reflexed, as long as the petals; fruit red, composed of few very large grains.—*Linn.! spec.* 1. *p.* 494; *Engl. bot. t.* 232; *DC. prodr.* 2. *p.* 564.

Greenland, *Hornemann!*—This species seems not to have been found in any part of the American continent proper.

12. *R. triflorus* (Richards.): unarmed; stem suffrutescent at the base, ascending, the branches herbaceous, often flagelliform; leaves 3- (sometimes pedately 5-) foliolate, on slender petioles; leaflets membranaceous, almost glabrous, or pubescent beneath, rhombic-ovate or somewhat ovate-lanceolate, acute at both ends, often acuminate, coarsely doubly serrate, often somewhat incised; the terminal one petiolulate; stipules ovate, entire; peduncle terminal, 1–3-flowered; the pedicels elongated, and, as well as the calyx, minutely glandular; sepals (5–7) lanceolate, acute or acuminate, at length reflexed, rather shorter than the spatulate-oblong erect (white) petals; fruit small, red.—*Richards.! appx. Frankl. journ. ed.* 2. *p.* 19; *Hook.! fl. Bor.-Am.* 1. *p.* 181, *t.* 62. R. saxatilis β. Canadensis, *Michx.! fl.* 1. *p.* 298; *Richards. l. c. ed.* 1. R. saxatilis, *Bigel. l. c.* R. saxatilis β. Americanus, *Seringe! in DC. l. c.* R. flagellaris, *E. Meyer, pl. Labrad.?* R. ægopodioides, *Seringe! in DC. l. c.* R. mucronatus, *Seringe, in DC. l. c.* (ex descr.) R. Canadensis? *Torr.! fl.* 1. *p.* 488, not of *Linn.* Cylactis montana, *Raf. in Sill. jour.* 1. *p.* 377.

Moist woods and shady hill-sides, Canada, from Hudson's Bay! and the Saskatchawan! to the New England States! the Northern part of New York! and Pennsylvania. June.—Stems, branches, &c. minutely pubescent; the summit of the sterile branches becoming stoloniferous and often rooting at the extremity. Leaflets sometimes deeply incised. Fruit composed of few grains, reddish purple when fully ripe, sour, but when they ripen in less shady situations rather pleasant, having nearly the flavor of R. occidentalis.—Dr. Richardson has well distinguished this species from R. saxalilis, the only one with which it can be confounded, and Hooker has given a good figure, but with the leaflets less acuminate and less acute at the base than is usual as it occurs in the United States.

† † **Stems biennial, somewhat shrubby.**

13. *R. strigosus* (Michx.): stem erect, suffruticose, armed, as well as the petioles, peduncles, and calyx, with straight spreading rigid bristles (some of which become weak hooked prickles) which are glandular when young, slightly glaucous; leaves pinnately 3–5-foliolate; leaflets oblong-ovate, acuminate, incisely serrate, canescently tomentose beneath; the terminal one often cordate at the base, the lateral sessile; stipules setaceous, deciduous; peduncles 4–6-flowered; petals (white) erect, about the length of the spreading sepals; fruit light red, very juicy.—*Michx.! fl.* 1. *p.* 297; *Pursh! fl.* 1. *p.* 346; *Torr.! fl.* 1. *p.* 488; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 19; *Hook.! fl. Bor.-Am.* 1. *p.* 177. R. Pennsylvanicus, *Poir. dict.* 6. *p.* 246. R. Idæus, *Nutt. gen.* 1. *p.* 308. R. Idæus β. Canadensis, *Richards. l. c. ed.* 1.

Hill-sides and rocky places, Canada! and from Newfoundland! and Saskatchawan! to Pennsylvania! Oregon, *Menzies*, *Douglas*. May.—Stems light brown, shining. Flowers rather larger than those of R. Idæus; the fruit resembling that species, and scarcely inferior in flavor; the carpels pruinose. The berries ripen from June to August. The leaflets are often narrow, but sometimes broadly ovate, and are occasionally confluent. The peduncles are axillary as well as terminal, and often aggregated at the summit of the branches so as to form a leafy panicle.—The true R. Idæus of Europe we believe is not indigenous even in the northern portion of this continent; but this species resembles it very much, and has sometimes been mistaken for it.—*Red Raspberry.*

14. *R. occidentalis* (Linn.): glaucous, armed with hooked prickles (not hispid); stems shrubby, recurved; leaves pinnately 3- (rarely 5-) foliolate; leaflets ovate, acuminate, coarsely doubly serrate, somewhat incised, canescently tomentose beneath; the lateral leaflets somewhat petiolulate; stipules setaceous; terminal peduncles several-flowered, the pedicels short; petals (white) shorter than the reflexed sepals; fruit dark purple.—*Linn.! spec.* 1. *p.* 493; *Michx.! fl.* 1. *p.* 297; *Pursh, l. c.*; *Torr.! fl.* 1. *p.* 489; *Richards. l. c.*; *Hook.! l. c.* (excl. β.); *Darlingt. fl. Cest. p.* 306. R. Idæus β. Americanus, *Torr.! in ann. lyc. New York*, 2. *p.* 196. R. Idæus, fructu nigro, &c. *Dill. Elth. t.* 247.

Borders of woods &c., Canada! and Northern States! to the mountains of Georgia, and west to Council Bluffs, Missouri, *Dr. James!* and sources of the Oregon, *Douglas*. Abounding where woods have been recently cut down. May.—Stems 5–8 feet long, reddish-brown, sparingly branched. Leaflets seldom cordate. Axillary peduncles 1–3-flowered, the upper ones clustered. Fruit roundish, nearly black when ripe, glaucous, composed of numerous small grains, well-flavored, ripening in June and July.—*Black Raspberry. Thimble-Berry.*—Resembles the preceding in its foliage, but the mode of growth is very different, as also is the fruit. Yet Mr. Oakes sends specimens, collected by Mr. Robbins at Cambridge, Vermont, which are said to bear fruit intermediate between the two, and the habit of the plant is apparently intermediate. "It is distinguished by the inhabitants, and was pointed out by them." The specimens seem to belong rather to R. strigosus. R. occidentalis, *Schlecht.!* (*in Linnæa*, 13. *p.* 271) from Mexico, is a different species.

15. *R. leucodermis* (Dougl.! mss.): glaucous, armed with very strong recurved prickles; stems erect; leaves 3-foliolate or sometimes pedately 5-foliolate; leaflets broadly ovate, incised and serrate, acute, canescently tomentose beneath; stipules setaceous; peduncles axillary and terminal, few-flowered; petals nearly the length of the sepals; fruit large, brownish-black with a white bloom.—R. occidentalis *β. Hook. fl. Bor.-Am.* 1. *p.* 178.

Oregon, *Douglas! Nuttall!*—The specimens received from Dr. Lindley and from Mr. Nuttall appear to differ from R. occidentalis in the numerous and remarkably strong prickles, larger, broader, and more incised leaflets; the latter when more than three being pedate, with the 3 upper leaflets much petiolulate, the two lower smaller and nearly sessile. The fruit, according to Nuttall, has the same flavor as R. occidentalis, but is covered with a copious bloom.

16. *R. spectabilis* (Pursh): unarmed or with deciduous prickles, erect; stem and branches terete; leaves nearly glabrous, 3-foliolate; leaflets ovate, acuminate, membranaceous, somewhat pinnatifid-incised, serrate; the lateral leaflets distant from the terminal one, subsessile, often deeply 2-lobed; stipules setaceous; peduncles solitary or in pairs, 1–2-flowered; sepals hairy at the base, broadly ovate, with a short acumination, much shorter than the oblong (bright red) petals; fruit large, yellowish or red.—*Pursh! fl.* 1. *p.* 348, *t.* 16; *Cham. & Schlecht.! l. c.*; *Bongard! veg. Sitcha, l. c. p.* 131; *Hook.! fl. Bor.-Am.* 1. *p.* 178; *Lindl.! bot. reg. t.* 1424. R. stenopetalus, *Fisch.* fide *Hook.*

In shady woods near streams, Oregon! and N. W. Coast! to Unalaschka! & Sitcha! common near the ocean.—Shrub 6–10 feet high. Flowers very large. Fruit ovoid, red, more than twice the size of that of R. Idæus, but much inferior in flavor, *Chamisso*, (oblong yellowish-white and well-flavored, *Douglas*: "varying from amber-yellow to cherry-red, highly translucent, but neither abundant nor very finely flavored, being rather watery and acidulous." *Nuttall.*) Styles long and somewhat persistent.

§ 2. *Carpels persistent on the somewhat juicy receptacle* (*fruit mostly ovate or oblong.*)—(Blackberry.)

17. *R. villosus* (Ait.): stem erect or reclined, angular, armed (as well as the petioles and often the midrib of the leaflets) with stout curved prickles; branches, peduncles, and lower surface of the leaves tomentose-villous and glandular; leaves 3-foliolate or pedately 5-foliolate; leaflets ovate or oblong-ovate, mostly acuminate, doubly or unequally serrate; the terminal one conspicuously petiolulate and mostly subcordate; stipules linear or subulate; peduncles many-flowered, the flowers racemose; bracts many times shorter than the pedicels; sepals with a linear acumination, much shorter than the obovate spreading (white) petals; fruit large, black.—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 210; *Michx.! fl.* 1. *p.* 297; *Bigel.! med. bot. t.* 38, & *fl. Bost. ed.* 2. *p.* 199; *Ell.! sk.* 1. *p.* 567; *Hook.! l. c.*; *Darlingt. fl. Cest. p.* 307. R. fruticosus, *Walt.*

β. frondosus (Torr.): much less glandular, smoother; stems erect or reclined; leaflets incisely serrate; flowers fewer, corymbose, with leafy bracts.—*Torr.! fl.* 1. *p.* 487. R. frondosus, *Bigel.! l. c.; Beck, bot. p.* 103. R. suberectus, *Hook. l. c.?* R. inermis, *Willd. enum.* 1. *p.* 549? (spec. not in *herb. Willd.*)

γ. *humifusus:* stems procumbent or trailing; leaves smaller; peduncles 1–5-flowered.—R. Enslenii, *Tratt. Rosac.* 3. *p.* 63? R. floridus, *Tratt. l. c.?*

Borders of woods and old fields, Canada! and throughout the United States! May–June.—This species varies much in its mode of growth and appearance; the tall erect forms (4–8 feet high) are often accompanied by prostrate stems, throwing up short few-flowered branches; and the racemes of the larger and more villous plant are often leafy below. The inflorescence, however, even in this form of the species, is not strictly a raceme, since the terminal flower (contrary to the diagnosis of Bigelow) always expands first, as it does in all the species of the genus, and the others follow irregularly. All the forms are glandular, but the R. frondosus of Bigelow much less so. The fruit is the same in all, ovoid-oblong, sometimes acute, half an inch to nearly an inch in length, purple, turning nearly black when fully ripe, when it is sweet and well-flavored. In the Northern States it ripens in July and August: in the Southern as early as June.—*Blackberry-bush. High Blackberry.*

18. *R. Canadensis* (Linn.): stem shrubby, ascending at the base, trailing or procumbent, somewhat prickly; leaves 3-foliolate or pedately 5–6-foliolate, glabrous or pubescent; leaflets oval, rhombic-ovate, or almost lanceolate, mostly acute or acuminate, membranaceous, sharply and unequally serrate, often somewhat incised; petioles and peduncles naked, or armed with bristly prickles; stipules linear, entire or serrate; flowers racemose or somewhat corymbose, with leafy bracts, the lower peduncles distant, the upper crowded; petals (white) twice the length of the mucronate sepals; fruit very large, black.—*Linn.! spec.* 1. *p.* 494. R. procumbens, *Muhl. cat.,* & *fl. Lancastr. ined.* R. trivialis, *Pursh; Torr.! fl.* 1. *p.* 489; *Bigel. l. c.; Hook.! l. c.; Darlingt.! fl. Cest. p.* 308; not of *Michx.* R. flagellaris, *Willd.! enum.* 1. *p.* 549. R. argutus, *Link, enum.* 2. *p.* 60.

Fields and barren or rocky soils, Canada! Newfoundland! and Northern States! to the Alleghany Mountains in Virginia. May.—Flowers smaller than in R. villosus. Pedicels and calyx often slightly glandular; sepals tomentose inside and along the margin. Fruit roundish or oblong, obtuse, half an inch to an inch in diameter, with large grains, black, very sweet and juicy when mature; ripening in July and August. When it grows in shady or moist places, the fruit is smaller and sour.—*Low Blackberry. Dewberry.*—It is not easy always to distinguish this species from the smoother and prostrate forms of R. villosus, and yet no one can doubt that they are distinct species. The leaflets are frequently 5 in number, and are then narrower; but we have never observed as many as 7 or 10; neither are they to be found in Linnæus's specimen of R. Canadensis, which was erroneously described in this respect from the circumstance of two leaves overlying each other. Hence the Linnæan species has not been recognized by succeeding botanists.

19. *R. hispidus* (Linn.): stems slender, prostrate, somewhat shrubby, clothed with retrorse bristles or weak prickles; leaves 3- (rarely pedately 5-) foliolate, mostly persistent; leaflets rather coriaceous, obovate, commonly obtuse, coarsely and unequally serrate, entire towards the base, glabrous; stipules linear; peduncles naked, mostly corymbosely several-flowered, often bristly; pedicels filiform; flowers small; petals (white) obovate or oblong-obovate, twice the length of the very spreading sepals; fruit small, blackish.

—*Linn.! spec.* 1. *p.* 493, not of *DC.* R. obovalis, *Michx.! fl.* 1. *p.* 298; *Pursh.! fl.* 1. *p.* 349; *DC. l. c.* R. obovatus, *Tratt. Rosac.* 3. *p.* 95; *Hook! fl. Bor.-Am.* 1. *p.* 180, *t.* 60; *Darlingt. fl. Cest. p.* 308. R. fragiformis, *Muhl. in herb. Willd.! no.* 9909. R. trivialis, *Torr.! fl.* 1. *p.* 39 (excl. syn.); *Willd.! enum.* (partly.) R. sempervirens, *Bigel. fl. Bost. ed.* 2. *p.* 201.

β. setosus: stems reclining; leaflets oblong-obovate, narrowed at the base; branchlets and pedicels bristly; fruit (ex *Bigel.*) red.—R. setosus, *Bigel.! fl. Bost. ed.* 2. *p.* 198.

In shady swamps and wet woods, Canada! and Northern States! to the mountains of S. Carolina! May–June.—Stem extensively prostrate among mosses &c., with short erect branches, thickly clothed with strong bristles, a few of which at length become prickles and are more persistent: the petioles and peduncles are commonly more or less armed with the same rigid bristles. The leaves are persistent until after those of the succeeding year are produced. Fruit sour, composed of few large grains.—We have specimens from Mr. Oakes which are quite intermediate between the ordinary forms of this species, and the R. setosus of Bigelow.

20. *R. trivialis* (Michx.): sarmentose-procumbent, shrubby, armed with bristles and strong at length uncinate prickles; leaves (persistent) 3- (or pedately 5-) foliolate; leaflets ovate-oblong or almost lanceolate, acute (rarely obtuse and slightly obovate,) sharply serrate, nearly glabrous; stipules subulate; peduncles 1–3-flowered; flowers large; petals broadly obovate, more than twice the length of the reflexed sepals; fruit large, black. —*Michx.! fl.* 1. *p.* 296; *Ell.! sk.* 1. *p.* 569; *Hook. & Arn.! compan. to bot. mag.* 1. *p.* 25 (α. & β.); not of *other authors.* R. flagellaris, *Hook. & Arn.! l. c.*, not of *Willd.* R. hispidus, *Willd.! l. c.; Seringe! in DC. l. c.* (excl. syn.)

β. branches erect; leaves (larger) oblong-ovate, mostly acuminate.

Pennsylvania? S. Carolina! to Florida! Louisiana! Arkansas! and Texas! in dry soil. March–May.—The leaves are more coriaceous and often smaller than in any other N. American species, the young stems very hispid as well as prickly, the flowers large in proportion, on long hispid or prickly peduncles. It is very different from the *Dew-berry* of the Northern States, which has been called R. trivialis. It ripens its fruit in May, and is called *Low Bush-Blackberry.*

21. *R. cuneifolius* (Pursh): shrubby, low, armed with stout recurved prickles; stems mostly erect; young branches and lower surface of the 3-foliolate leaves pubescent-tomentose; leaflets cuneiform-obovate, rather coriaceous, with the veins prominent beneath, serrate towards the apex, the margin revolute near the base; stipules linear-setaceous; peduncles few-flowered; petals obovate (white or rose-color), much longer than the tomentose oblong mucronate sepals; fruit ovoid, black.—*Pursh! fl.* 1. *p.* 347; *Nutt.! gen.* 1. *p.* 308; *Ell. sk.* 1. *p.* 586; *Torr.! fl.* 1. *p.* 483; *Darlingt. fl. Cest. p.* 306. R. parvifolius, *Walt. Car. p.* 149.

Sandy woods and fields, Long Island! and New Jersey! to Florida! May–June.—Stem 1–3 feet high. Leaves rarely pedately 5-foliolate: the terminal leaflet petiolulate. Pedicels diverging. Fruit about half an inch long, ripening in June in the Southern States (farther north in July and August), juicy and well-flavored.

22. *R. ursinus* (Cham. & Schlecht.): stem procumbent, terete, aculeate; branches, petioles, midrib of the leaflets, and calyx prickly and tomentose; leaves 3-foliolate (the uppermost often simple); the leaflets broadly ovate, somewhat petiolulate; the terminal one subcordate, somewhat lobed, unequally serrate, hirsute above, tomentose beneath; stipules linear, small; pedun-

cles few-flowered; sepals ovate, mucronate or acuminate, shorter than the (red, *Hook.*) petals.—*Cham. & Schlecht.! in Linnæa*, 2. *p.* 11. R. Menziesii, *Hook.! fl. Bor.-Am.* 1. *p.* ~~141~~, *& bot. Beechey, l. c.*

California, *Menzies! Chamisso!*—Probably not a native of the North West Coast, as the specimen of Mr. Menzies in the Banksian herbarium is stated to come from California. The plant of Chamisso is the same: the species is a *Blackberry*, nearest allied, perhaps, to our R. cuneifolius.

23. *R. macropetalus* (Dougl.): hirsute-pubescent, "diœcious"; stem tall, shrubby; branches and petioles, as also the midrib of the leaflets and the calyx, armed with setaceous prickles; leaves 3-foliolate, the lower ones often pinnately 5-foliolate; leaflets ovate, incised and serrate, the terminal one rather distant; stipules lanceolate; peduncles axillary and terminal, 2–7-flowered; sepals acuminate, nearly equalling the oblong spreading petals; fruit oblong, black.—*Dougl. in Hook.! fl. Bor.-Am.* 1. *p.* 178, *t.* 59; *Hook. & Arn.! bot. Beechey, p.* 140. R. myriacanthus, *Dougl.! mss.*

Along rivers and in low woods, Oregon, *Douglas! Dr. Scouler! Nuttall! Mr. Tolmie!* and in California.—Branches often glaucous. Leaves on the sarmentose branches often 5-foliolate; the lower pair distant, conspicuously petiolulate, and often 2-lobed. There are two forms, one with the leaflets mostly acute; the other (β. mollis, *Nutt.* R. myriacantha, *Dougl.*) with the leaflets mostly obtuse and more pubescent, and the prickles nearly straight: the uppermost leaves often simple. Mr. Nuttall remarks that the flowers are diœcious, or rather diœcio-polygamous. "The figure of Hooker represents the sterile plant. In the fertile, the flowers are not half the size, and want the stamens altogether. The flowering branches are all trifoliolate, and the leaves are often persistent. The fruit (a *blackberry*) is cylindric-oval, brownish-black, juicy, and sweeter than our common blackberry (R. villosus)." *Nutt.*

Tribe III. ROSEÆ. *Juss.*

Calyx urceolate; the tube contracted at the mouth, at length fleshy or baccate, including the numerous distinct ovaries; the segments somewhat spirally imbricated in æstivation. Carpels (achenia) 1-seeded and indehiscent, crustaceous, hairy, with 2 suspended ovules, one above the other, inserted on the whole inner surface of the thickened torus or disk which lines the tube of the calyx: styles terminal or nearly so, somewhat exserted, distinct, or connate above, rather persistent.—Shrubby and prickly plants, with pinnate leaves, rarely reduced to a single leaflet, and mostly adnate stipules.

25. ROSA. *Tourn.; Linn.; Lam. ill. t.* 440; *Lindl. monogr. Ros.* (1820.)

Character same as of the tribe. Stipules present.

* *Styles coherent into a column.*

1. *R. setigera* (Michx.): branches elongated, ascending, glabrous, armed with a few stipular or scattered stout somewhat uncinate prickles; leaflets (large) 3–5, ovate or oblong-ovate, acute or acuminate, sharply serrate, glabrous and rather shining above; stipules narrow, the free apex lanceolate or subulate; petioles, peduncles, and calyx glandular; flowers corymbose; calyx-segments acuminate or attenuate-cuspidate, entire, or commonly with 2 or more lateral setiform appendages; petals obcordate, rather caducous;

styles cohering in a column as long as the stamens; fruit globose, smooth (red).—*Michx.! fl.* 1. *p.* 295. R. rubifolia, *R. Br. in hort. Kew.* (*ed.* 2.) 3. *p.* 260; *Seringe, in DC. l. c.*

a. glabra: leaves 3-foliolate, glabrous beneath.

β. tomentosa: leaves 3- (sometimes 5-) foliolate, tomentose beneath.—R. rubifolia, *R. Br. l. c.*

Southern and Western States, from Michigan! and Ohio! to Arkansas! Louisiana! and Georgia! June–July.—This beautiful species is capable of being trained to a great extent: it bears a profusion of large but nearly inodorous reddish flowers. The petioles are usually a little prickly. The name of R. rubifolia must yield to the prior one of Michaux, and it is besides too similar in sound with R. rubrifolia.

* * *Styles not coherent.*

2. *R. Carolina* (Linn.): stem smooth, armed with stout recurved mostly stipular prickles, not bristly; leaflets 5–9, elliptical, often acuminate, finely serrate, petiolulate, not shining above, the lower surface as well as the petiole puberulent and pale; stipules long and narrow, the margins involute; flowers corymbose; calyx and peduncles glandular-hispid; the sepals mostly entire, with foliaceous terminations; fruit depressed-globose (dark red and shining when mature), mostly a little glandular-hispid.—*Linn.! spec.* (*ed.* 2.) 1. *p.* 703; *Pursh, fl.* 1. *p.* 341; *Ell. sk.* 1. *p.* 565; *Lindl. Ros. p.* 23, *t.* 4; *Torr.! fl.* 1. *p.* 486; *Seringe, in DC. l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 199; *Darlingt. fl. Cest. p.* 311. R. corymbosa, *Ehrh. beitr.* 4. *p.* 21; *Muhl. cat.* R. Virginiana, *Duroi.* R. Pennsylvanica, *Michx. fl.* 1. *p.* 296 (partly). R. Caroliniana, *Bigel.*

In low swampy grounds and thickets, Canada! and Northern States! to Ohio! and in the Southern States towards the mountains. July.—Stem 4–6 feet high, with very smooth purplish branches. Leaflets acute at the base, sometimes obtuse and a little obovate. Petioles a little bristly and glandular. Petals large, reddish, mostly obcordate.—Elliott is quite right in the suggestion that R. lucida, or at least some other than the present species, was the original R. Carolina. The species was entirely founded on "Rosa Carolina fragrans" &c. *Dill. Elth. t.* 245, *f.* 316, in the first edition of the species Plantarum, which certainly was not intended for the present plant. In the second edition, Linnæus has described from the specimen in his own herbarium (from the Upsal garden), which belongs to the present species, and has adduced the synonym of Dillenius with a mark of doubt. Hence it would be improper to restore the name to the original plant, which cannot be identified from the figure.—*Swamp Rose.*

3. *R. lucida* (Ehrh.): stems armed with numerous scattered unequal setaceous at length mostly deciduous prickles; those of the flowering branches stipular, slender, straight or slightly recurved, or sometimes wanting; leaflets 5–9, elliptical, sharply serrate, glabrous and shining above, the lower pair commonly approximate to the stipules; the petioles somewhat glandular or hispid; stipules dilated; flowers 1–3; the peduncles and entire or laciniate-appendiculate elongated calyx-segments glandular-hispid; the tube sometimes glabrous; petals obcordate or emarginate, about the length of the calyx-segments; fruit (small, red) depressed-globose, mostly glabrous when mature.—R. lucida & parviflora, *Ehrh.*; *Willd.! & authors.*

a. leaflets crowded, elliptical-oblong or lanceolate-ovate, scarcely paler and glabrous or slightly pubescent on the veins beneath; petioles mostly glabrous.—R. parviflora, *Ehrh. beitr.* 4. *p.* 11; *Willd.! spec.* 2. *p.* 1068; *Jacq. fragm. t.* 107, *f.* 3; *Ell. sk.* 1. *p.* 563; *Lindl.! Ros. p.* 17; *Hook.*

l. c. R. Carolina, *Duroi.* R. Carolina fragrans, &c., *Dill. Elth. t.* 245, *f.* 316? R. rapa, *Bosc.; Poir. suppl.* R. Caroliniana, *Michx.! fl.* 1. *p.* 295. R. parviflora, *Torr.! fl.* 1. *p.* 484.

β. leaflets less crowded, oval, mostly very obtuse, paler but often nearly glabrous beneath; petioles pubescent or glabrous.—R. parviflora, *Ehrh. l. c.; Willd.! l. c.; Lindl.! Ros. p.* 20. R. humilis, *Marsh.* R. Pennsylvanica, *Wang. Amer. p.* 113. R. lucida, *Torr.! l. c.*

γ. leaflets (5–7) not crowded, shining above, much paler and pubescent beneath; petioles pubescent, and often with the midrib of the leaflets glandular; stipules scarcely dilated; flowers smaller.—R. parviflora, *Ell. l. c.?* R. Lyoni, *Pursh, fl.* 1. *p.* 345.

In dry places and also along the margin of swamps, Newfoundland and New England States! to Georgia! *γ.* Western States from Ohio! to Louisiana! Arkansas! and Alabama! May–June.—Stem 1–2 (or sometimes 3) feet high, with greenish branches; the stipular prickles straight and slender, horizontal or deflexed, sometimes a little recurved. Flowers rather large, pale red.—We have various intermediate forms of this common and widely diffused Rose, which, we are confident, belong to a single species.

4. *R. nitida* (Willd.): stems low, and, with the branches and peduncles, densely armed with straight and slender prickles or strong bristles; leaflets 5–9, rather rigid or coriaceous, very glabrous and shining, lanceolate or lanceolate-oblong, serrate; stipules dilated, reaching to the lowest pair of leaflets; flowers solitary; calyx hispid, with the bristles somewhat glandular; petals (red) obcordate; fruit (scarlet) shining, globose.—*Willd. enum.* 1. *p.* 554; *Lindl.! Ros. p.* 13, *t.* 2; *DC. prodr.* 2. *p.* 603; *Hook.! l. c.* R. blanda, *Pursh, fl.* 1. *p.* 344, & 2. *p.* 749, not of *Ait.*

Newfoundland! to Massachusetts, *Mr. Oakes!*—Resembles some forms of R. lucida, but appears to be an entirely distinct species. [The] specimen named R. nitida in Willdenow's herbarium is R. lævigata, *Michx.!* One [illegible]

5. *R. cinnamomea* (Linn.): prickles of the young sterile stems crowded, straight, and unequal, the larger ones subulate, the smaller setaceous and not glandular; those of the branches stouter, stipular, and arcuate; leaflets 5–7, oval-oblong, simply serrate, cinereous-pubescent beneath; stipules of the sterile branches linear-oblong, with the margins tubulose-connivent; those of the flowering branches dilated above, with ovate acuminate spreading auricles; segments of the calyx as long as the corolla, entire, lanceolate-acuminate; peduncles short, straight in fruit, and, as well as the calyx-tube, glabrous; fruit globose, smooth, pulpy, crowded with the connivent persistent calyx-segments. *Koch.*—*Engl. bot. t.* 2388; *Lindl. Ros. p.* 28, *t.* 5; *DC. prodr.* 2. *p.* 605 (excl. *β.*); *Hook. l. c.; Koch, fl. Germ. & Helv. p.* 224.

β. lower; prickles of the flowering branches solitary, recurved.—R. majalis, "*Retz. obs.*;" *Lindl.! Ros. p.* 34; *Hook. l. c.*

Shores of the Oregon, *Dr. Scouler,* (ex *Borrer* in *Hook. l. c.*) *β.* From the Saskatchawan to Mackenzie River, *Dr. Richardson.*—We have a specimen from Dr. Scouler, labelled R. cinnamomea, which appears to be R. fraxinifolia. We have no wild specimens of R. majalis; but a cultivated one from the garden of the London Horticultural Society has wholly the dilated stipules of R. cinnamomea.

6. *R. blanda* (Ait.): stems and sterile branches (reddish) armed with scattered unequal straight and slender deciduous prickles, the flowering branches and petioles mostly naked; leaflets 5–7, oval or oblong, obtuse, equally serrate, not shining above, pale and usually minutely pubescent beneath, the petioles tomentose-pubescent or sometimes glabrous; stipules much dilated, with entire or glandular-serrulate margins; flowers 1–3, on

short glabrous peduncles; segments of the calyx entire, shorter than the corolla, often glandular, the tube glabrous and glaucous; fruit globose, crowned with the persistent at length connivent calyx-segments.—*Ait. Kew.* (*ed.* 1.) 2. *p.* 202; *Jacq. fragm. t.* 105; *Willd. l. c.; Lindl. Ros. p.* 25; *Hook.! fl. Bor.-Am.* 1. *p.* 199. R. Pennsylvanica, *Michx. l. c.* (partly, ex spec.!) R. gemella, *Willd. enum.* 1. *p.* 344. (partly, ex spec.!); *Smith! in Rees, cycl.* R. fraxinifolia, *Seringe, in DC. l. c.* R. Lindleyi, *Spreng. syst.? Seringe, l. c.?*

β. leaflets 7–9, smaller.—R. Woodsii, var. *Borrer, in Hook.! l. c.*

Newfoundland! Hudson's Bay, Saskatchawan! (as far north as Bear Lake, *Richardson!*) to the northern portions of the New England States! New York! and Pennsylvania (on rocks). May–June.—Stems 1–3 feet high. Flowers rather large, rose-color: petals obcordate.—This cannot readily be confounded with any other American species (at least on this side of the Rocky Mountains) except, perhaps, with R. cinnamomea. From that species it is distinguished by the smaller bracts, shorter sepals as compared with the petals, and in having no stipular prickles; the more persistent ones moreover being always straight. It is often almost entirely unarmed. It is the earliest-flowering indigenous species in the Northern States.

7. *R. fraxinifolia* (Bork.): stems armed with scattered bristly prickles, or at length unarmed; the branches strict, naked, somewhat glaucous; leaflets 5–7, oval, not shining, sharply and rather coarsely serrate, slightly hairy beneath, or glabrous; stipules dilated, sometimes serrulate and glandular; flowers corymbose, on short glabrous peduncles; segments of the calyx a little glandular, appendiculate, entire; the tube glabrous and a little glaucous; fruit (large, red) ovoid, crowned with the persistent calyx-segments.—"*Bork. holz.* 301"; *Seringe, l. c.* (excl. *α.* blanda); *Bot. reg. t.* 458; *Hook.! fl. Bor.-Am.* 1. *p.* 199. R. megacarpa, *Nutt. mss.*

Oregon, near the sea, *Menzies! Dr. Scouler! Nuttall.*—This is doubtless distinct from R. blanda, and is, we suspect, confined to the Pacific coast. The petioles in the younger shoots are sometimes a little prickly, and the teeth of the leaflets serrulate.—To this species apparently belongs the Rosa blanda? *Hook. & Arn. bot. Beechey, suppl. p.* 338, from California; but the R. Californica indicated by Chamisso & Schlechtendal is probably different.

8. *R. Woodsii* (Lindl.): armed with numerous straight and weak prickles; leaflets 7–9, oblong, obtuse, approximate, glabrous, shining; the petioles often leafless at the base; stipules connivent, distant from the lower pair of leaflets, glandulose-fimbriate on the margin; sepals short, naked, ovate? *Seringe, l. c.*—*Lindl. Ros. p.* 21, *& bot. reg. t.* 976.

On the Missouri River. Sepals connivent. Allied to R. cinnamomea. *Lindl.*—We have no authentic specimens of this species. The so-called variety of Mr. Borrer, with opaque leaves quite downy beneath, we refer to R. blanda.

9. *R. foliolosa* (Nutt.! mss.): branches slender, glabrous, armed with very weak scattered deciduous bristly prickles, and sometimes with persistent short and nearly straight stipular prickles; leaflets 7–11, linear-oblong, glabrous, shining above, sharply serrate, crowded, the lower pair close to the narrow glandular-ciliate stipules; the petiole and midrib often setose and pubescent; flowers mostly solitary and almost sessile; calyx glandular-hispid; the segments reflexed, often with lateral appendages; fruit subglobose, somewhat hispid.

Prairies of Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* Texas, *Drummond!* East Florida?—A remarkable species, with the leaves much crowded on the flowering branches and often fascicled: leaflets sometimes only half an inch in length. Flowers small, apparently rose-color; the peduncles ¼–½ an inch in length.

10. *R. gymnocarpa* (Nutt.! mss.): "branches glabrous, furnished with scattered slender and straight weak deciduous prickles; leaflets 5–9, glabrous, rather distant, oval, sharply doubly serrate; the serratures, as well as the petioles and peduncles, glandular; stipules broad and short, glandular-serrulate; flowers (very small) solitary or sometimes in pairs; segments of the calyx ovate, with a simple acumination, deciduous; the tube glabrous; fruit oval (red), smooth and naked."

Oregon, in shady woods, common, *Nuttall! Douglas!*—This species belongs to the *Dog-Rose* section. The flowers are remarkably small, red; and the fruit about the size of a small pea. The slender petioles are often slightly bristly. [illegible]

11. *R. stricta* (Lindl.): much branched; stems armed with numerous setaceous scattered, often deciduous prickles; flowering branches mostly naked; leaflets 7–9, oval, firm, glabrous, not shining, the petiole glandular-hispid; stipules lanceolate, mostly glandular-ciliate; flowers 1–3, on glabrous or glandular-hispid peduncles; calyx-segments spreading; fruit ovoid, pendulous.—*Lindl.! Ros. p.* 42, *t.* 7; *Seringe, in DC. l. c.* R. pendulina, *Ait.?*

β. lower surface of the leaves pubescent. *Hook. fl. Bor.-Am.* 1. *p.* 200.

On the Saskatchawan (*β.*), *Drummond.*—This species is perhaps too closely allied to R. alpina. We are confident that it has never been found within the limits of the United States. For this species Lindley quotes Muhlenberg's Catalogue: but Muhlenberg seems not to know the plant (giving no locality or observation), and refers to Donn for the name. The species was established on garden specimens, which may or may not have been of American origin. It is uncertain whether the plant figured by Dillenius (*Elth. t.* 245, *f.* 317) belongs to R. alpina or the present species. On it R. pendula of Linnæus (who states it to be a native of Europe), is founded, and doubtless R. pendulina, *Ait.*, which Seringe considers a variety of R. alpina.

‡ *Naturalized Species.*

12. *R. rubiginosa* (Linn.): branches (yellowish-green) armed with scattered very strong somewhat recurved prickles; leaflets 5–7, roundish-oval or obovate, sharply serrate, the margins, with the lower surface and stipules, more or less clothed with ferruginous glands; flowers mostly solitary, on short bristly-hispid peduncles; fruit ovoid or obovate (reddish-orange when mature), somewhat hispid or unarmed when young.—*Linn.! mant. p.* 564; *Jacq. fl. Austr. t.* 50; *Willd.! spec.* 2. *p.* 1073; *Engl. bot. t.* 991; *DC.! l. c.* R. suaveolens, *Pursh, fl.* 1. *p.* 346.

In waste places, road sides, and cultivated grounds throughout the United States; perfectly naturalized in many places. June–July.—Leaves somewhat viscid, and very fragrant. Calyx-segments either laciniate or entire. Petals pale red, turning white, emarginate.—The R. suaveolens is only a variety of this species with nearly straight and more slender prickles.—*Eglantine. Sweet Brier.*

13. *R. lævigata* (Michx.): very glabrous; branches armed with very strong often geminate curved prickles; leaves 3- (sometimes 5-) foliolate; leaflets coriaceous, shining, sharply serrate; stipules setaceous, deciduous; flowers solitary, terminal; tube of the calyx ovoid, muricate with long prickly bristles.—*Michx.! fl.* 1. *p.* 295; *Ell. sk.* 1. *p.* 566. R. Sinica, *Ait. Kew.*

(*ed.* 2.) 3. *p.* 261; *Bot. mag. t.* 2487; *Lindl.! Ros. p.* 127, *t.* 6, *& bot. reg. t.* 1922; not of *Linn.* R. nivea, *DC.! hort. Monsp., & prodr.* 2. *p.* 598. R. hystrix, *Lindl. Ros. t.* 17: *DC. l. c.* R. Cherokeensis, *Donn, cat.* R. ternata, *Poir.* ex *DC.* R. trifoliata, *Bosc.*

S. Carolina! to Louisiana! cultivated in gardens and extensively naturalized. April.—Stem with long flexible branches, capable of being trained to a great length. Flowers very large, white.—This evergreen species has been cultivated for many years in the Southern States, under the name of *Cherokee Rose.* It is doubtless of Chinese origin; but as it is not the R. Sinica of Linnæus, we continue to use the name of Michaux, which is several years older than the second edition of the Hortus Kewensis. According to Elliott it is well adapted for hedges. It is certainly too tender to endure the winter of the Northern States; hence the plant from Lake Huron referred to this species by Mr. Borrer, in Hooker's Flora, must be very different.

14. *R. bracteata* (Wendl.): branches erect, tomentose, armed with strong recurved often geminate prickles; leaflets 5–9, obovate, slightly serrate, coriaceous, shining, glabrous; stipules nearly free, setaceous, fimbriate; flowers solitary, terminal, on short peduncles; bracts large, surrounding the base of the calyx; peduncles and calyx densely tomentose; fruit globose, large, orange-red. *Seringe.*—"*Wendl. obs. hort. Herrenhaus. p.* 7, *t.* 22;" *Redout. Ros.* 1. *t.* 35; *Seringe, in DC. prodr.* 2. *p.* 602.

Naturalized in hedges near New Orleans, *Dr. Riddell!*—Flowers large, white. This species is also of Chinese origin.

‡ *Doubtful Species.*

15. *R. lutescens* (Pursh): fruit globose and, with the peduncles, glabrous; branchlets hispid-prickly; leaflets 7, oval, serrate with acuminate teeth, glabrous; petioles unarmed; flowers solitary; segments of the calyx lanceolate, cuspidate; petals oval, very obtuse. *Pursh, fl.* 2. *p.* 736; *Lindl. Ros. p.* 47, *t.* 9.

Described by Pursh from a garden specimen *said to come* from Carolina. Flowers white with a faint tint of yellow. *Pursh.* Fruit black, crowned with the connivent sepals; peduncle thickened at the apex. *Lindl.*—Probably not American.

R. Californica (Cham. & Schlecht. *in Linnæa,* 2. *p.* 35.)—Under this name a supposed new species is indicated but not characterized, the specimen being insufficient. The branches are said to be glabrous, with slightly recurved stipular prickles, otherwise unarmed: the leaflets 5–7, ovate, obtuse, sharply serrate, tomentose beneath, pubescent above, not glandular, the terminal one largest, about 9 lines in length: the flowers somewhat corymbose, about the size of those of R. pimpinellifolia: the peduncles furnished with spreading hairs: the calyx-tube ovoid, glabrous; the segments ovate, with a long dilated spatulate acumination, &c. St. Francisco, California.

The following North American species of Rosa are proposed by Rafinesque in his monograph (published in *Ann. sci. phys. Par.*, and afterwards in a separate form), viz: *R. Kentuckensis, trifoliolata, elegans, globosa, cursor, obovata, nivea* (R. Rafinesquii, *Seringe*), *pusilla, enneaphylla, flexuosa, acuminata, pratensis, riparia,* and *dasistema.*

SUBORDER IV. POMEÆ. *Juss.*

Calyx campanulate or urceolate, more or less globose in fruit, when it becomes extremely thick and juicy, including and cohering with the ovaries. Ovaries 2–5, or sometimes solitary, mostly coherent with each other, with 2 collateral ascending ovules: styles terminal, sometimes coherent: stigma simple or emarginate. Fruit a pome, 1–5-celled; the cells sometimes spuriously divided by the inflexion of the dorsal suture. Seeds 1–2 in each carpel (many in Cydonia). —Trees or shrubs (confined to temperate climates), with simple or sometimes pinnate leaves, which, except in Cotoneaster, do not contain hydrocyanic acid. Fruit usually eatable.

26. CRATÆGUS. *Linn.* (excl. spec.); *Lindl. in Lin. trans.* 13. *p.* 105.

Calyx-tube urceolate; the limb 5-cleft. Petals 5, orbicular, spreading. Stamens numerous. Styles 1–5, glabrous, or hairy at the base. Pome fleshy or baccate, crowned with the teeth of the calyx, containing 1–5 bony 1-seeded carpels; the summit contracted or closed by the disk.—Thorny shrubs or small trees, with simple often incised or lobed leaves. Flowers in terminal corymbs, or rarely solitary, usually white. Bracts linear or subulate, deciduous. Fruit often eatable.—*Thorn-tree.*

The fruit is sometimes more or less concave and open at the summit, as in Mespilus Germanica, which perhaps is not generically distinct.—The leaves are subject to considerable variation in almost every species; and those of the young and vigorous shoots are longer, more incised or lobed, and often quite different in form and appearance from those of the flowering branches: the stipules in the former are much larger and foliaceous, and perhaps always glandular; but no dependence can be placed on them for specific characters. The same may be said of the glands on the margin of the leaves and calyx-segments; they may be observed in all our species (except C. cordata, and even on the stipules of that plant) and they are not uniformly present in any. The styles vary from 1 to 3, and from 3–5, in many species; and the fruit which would be globose when 5 carpels ripen, is sometimes ovoid when 2 or 3 of the carpels are suppressed. Good characters may, however, be derived from the fruit, as also from the calyx, the inflorescence, and, to a certain extent, from the leaves. Notwithstanding these difficulties, we consider the North American species as mostly well characterized. The uncertainty which has prevailed concerning them, is to be attributed in no small degree to the confusion in the synonomy; and this we have fortunately had the means of rectifying to a considerable extent.

* *Corymbs many-flowered.*

1. *C. Oxyacantha* (Linn.): leaves obovate, 3–5-lobed, incised and serrate, cuneiform at the base, shining, and, with the branchlets and peduncles, glabrous; segments of the calyx ovate, acute or acuminate, not glandular; styles 1–3; fruit (deep red or purple) ovoid, small.—*Linn.! spec.* 1. *p.* 477; *Fl. Dan. t.* 334; *Engl. bot. t.* 2054; *Schk. handb. t.* 132; *Darlingt. fl. Cest. p.* 294.

Road-sides, fence-rows, &c., introduced from Europe and sparingly naturalized. It also exists in Newfoundland, but was probably introduced. —*Hawthorn. English Thorn.*

2. *C. Crus-galli* (Linn.): leaves obovate-cuneiform, shining, coriaceous, glabrous, nearly sessile, serrate, entire near the base; spines very long; peduncles and pedicels glabrous or nearly so; styles 1–3; fruit (red) somewhat pyriform.—*Linn.! spec.* 1. *p.* 476; *Ait.! Kew.* (*ed.* 1.) 2. *p.* 170; *Willd.! spec.* 2. *p.* 1004; *Michx.! fl.* 1. *p.* 288; *Pursh, fl.* 1. *p.* 338; *Ell. sk.* 1. *p.*

548; *Torr.! fl.* 1. *p.* 476; *Wats. dendrol. t.* 56; *Seringe! in DC.! prodr.* 2. *p.* 626; *Hook.! fl. Bor.-Am.* 1. *p.* 200; *Darlingt. fl. Cest. p.* 290; *Loudon, arb. Brit.* 3. *p.* 820. C. lucida, *Wang. Amer. t.* 17, *f.* 42; *Mill.! dict.* Mespilus lucida, *Ehrh. beitr.* 4. *p.* 17. M. Crus-galli, *Lam. dict.* 4. *p.* 441; *Willd.! enum.* 1. *p.* 523. M. cuneiformis, *Marsh. arbust. p.* 88?

β. *pyracanthifolia* (Ait.!): leaves cuneiform-oblanceolate.—C. Crus-galli γ. salicifolia, *Ait.! l. c.*

γ. *ovalifolia* (Loudon): leaves broadly oval, slightly cuneiform at the base, often with a more distinct petiole.—*Loudon, arb. Brit. t.* 31; *Lindl.! bot. reg. t.* 1860. C. ovalifolia, *Hornem. hort. Hafn.*; *Seringe, l. c.*

δ. *linearis* (Seringe): leaves linear-oblong; spines rather short; corymbs minutely pubescent; segments of the calyx mostly glandular.—C. linearis, *Pers. syn.* 2. *p.* 37. Mespilus linearis, *Desf. arb.* 2. *p.* 156; *Poir.! l. c. p.* 70 (ex spec. *hort. Par.*); *Spach! suite Buff.* M. nana, "*Dum.-Cours. suppl. p.* 386"?

ε. *prunifolia*: leaves oblong or oval, with rather distinct petioles; corymbs minutely pubescent; segments of the calyx often glandular.—C. prunifolia, *Bosc.! in DC.! l. c.*; *Lindl.! bot. reg. t.* 1868. Mespilus prunifolia, *Poir.! l. c.*; *Spach! l. c.* M. Boscii, *Spach, l. c.?* M. cuneifolia, *Ehrh. l. c.?* (v. sp. *in herb. Berol.*)

Thickets &c. Canada! to Florida! west to Indiana! and Missouri! May–June.—Stem 10–20 feet high. Spines often 2–3 inches long, sharp and rather slender. Leaves usually obtuse, paler and dull beneath. Segments of the calyx linear-lanceolate, rather shorter than the petals, occasionally glandular-serrate, as are nearly all the species.—The varieties δ. & ε. which we only know from cultivated specimens, are somewhat peculiar; but we have apparently intermediate indigenous forms.—*Cock-spur Thorn.*

3. *C. rivularis* (Nutt.! mss.): "arborescent, nearly glabrous; leaves ovate or obovate, obtuse or sometimes acute, simply or somewhat incisely serrate, attenuate into a short petiole; spines long; corymb many-flowered, glabrous; flowers small; segments of the calyx obtuse and very short, not glandular; fruit black."

Oregon, along rivulets in the Rocky Mountains, *Nuttall!* Interior of Oregon, *Douglas!*—We have good specimens of this apparently very distinct species from Douglas's collection. The leaves are, as Mr. Nuttall remarks, "about as entire as those of the Apple," to which they bear some resemblance, serrate with short and broad teeth, sometimes a little incised toward the apex, mostly obtuse, shining and minutely pubescent on the upper surface. The young branches are reddish-brown. We have only seen the very young fruit.

4. *C. sanguinea* (Pallas): leaves broadly obovate, somewhat cuneate at the base, incised and serrate, often slightly 5–7-lobed, a little pubescent when young, on short petioles, at length coriaceous and shining; corymbs glabrous or somewhat pubescent; segments of the calyx entire, and, as also the pedicels, not glandular; styles 3–4; fruit globose.—*Pall. fl. Ross.* 1. *p.* 25, *t.* 11, ex *Willd.* Mespilus purpurea, *Poir.* ex *Spach!*

β. *Douglasii*: spines short and stout (sometimes long in cultivation, ex *Loud.*); fruit small, dark purple, juicy and sweet.—C. punctata β. brevispina, *Dougl. in Hook. fl.* 1. *p.* 201. C. glandulosa β. brevispina, *Nutt.! mss.* C. glandulosa, *Pursh, l. c.* as to the Rocky Mountain plant? C. Douglasii, *Lindl.! bot. reg. t.* 1810; *Loudon, arb. Brit.* 3. *p.* 823.

Banks of streams (β.) Oregon, *Douglas! Nuttall!*—A small tree, with reddish branchlets.—The Oregon plant agrees well with our specimen of C. sanguinea, *Pall.* from Altaic Siberia, from which we have drawn the character here given. Not having access to the work of Pallas, we know not the color of the fruit. It seems sufficiently distinct from C. coccinea; in our specimens of the American plant, the calyx-segments are free from glands, and this is also remarked by Nuttall. Dr. Lindley, however, describes it otherwise; and there is scarcely a species in which these glands do not sometimes appear. We find 3–4 styles, while Mr. Nuttall states it to be pentagynous. The spines, it seems, do not afford a constant character in this, or indeed in any other species.

5. *C. coccinea* (Linn.): leaves roundish-ovate (membranaceous) acutely incised or angulate- (5–9-) lobed, sharply serrate, truncate or often acute (those of the sterile branches mostly cordate) at the base, on slender petioles, at length nearly glabrous; spines stout; corymbs and calyx pubescent or glabrous; styles 5 (often 3 or 4); fruit large (bright red) globose.—*Linn.! hort. Cliff. & spec. l. c.; Ait.! l. c.; Willd.! l. c.* (excl. syn.); *Michx.! fl.* 1. *p.* 288; *Ell. sk.* 1. *p.* 553; *Torr.! fl.* 1. *p.* 474; *Seringe! in DC. l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 201; *Loudon, arb. Brit. l. c.; Lindl.! bot. reg. t.* 1957. C. glandulosa, *Willd.! l. c.* (excl. syn.); *DC. l. c.; Hook.! l. c.; Loudon, l. c.; Lindl.! l. c.* (*β.* macracantha) *t.* 1912, not of *Ait.* C. Crus-galli, *Bigel.! fl. Bost. ed.* 2. *p.* 194. C. flabellata, *Bosc.!* (ex spec. *hort. Par.*)

β. viridis: glabrous; leaves smaller and less incised, acute at the base; fruit of 3 carpels and then oval or pyriform, or of 5 carpels and globose.—C. viridis, *Linn.! spec. l. c.; Ell. l. c.?*

γ. populifolia: glabrous; leaves smaller, on very slender petioles, deltoid-ovate, mostly cordate at the base; corymbs small; fruit globose, of 5 carpels.—C. populifolia, *Ell.! l. c.*, not of *Walt.*

δ. oligandra: nearly glabrous; corymbs few-flowered; stamens 5; styles 2–4.

ε.? mollis: leaves large, incised and very acutely serrate, more scabrous above, the lower surface, branchlets, peduncles, and calyx canescently tomentose when young; fruit large, globose, pubescent when young, of 5 carpels.—C. subvillosa, *Schrad. hort. Goett.* (v. sp. *hort. Par.*)

Borders of thickets and streams, Canada! to Florida! and Louisiana! *δ.* New Albany, Indiana, *Dr. Clapp!* (shrub 6–9 feet high.) *ε.* Ohio, *Mr. Lea!* Indiana, *Dr. Clapp!* Kentucky, *Dr. Short!* Texas, *Drummond!* May.—Shrub or small tree 10–25 feet high; the thorns often short and a little curved, sometimes very long and large. Leaves usually cut into 3–4 small acute or acuminate serrated angulate lobes on each side. Segments of the calyx lanceolate, denticulate, and mostly, but not always, glandular; as also are the bracts, and occasionally the petioles. Fruit from one-third to half an inch in diameter, red or reddish-purple when fully ripe, eatable.—We have distinguished only the more marked varieties, as they occur in a wild state; but several others are known in nurseries, &c. In an extensive suite of specimens, every intermediate form may be observed. Our var. mollis (of which C. subvillosa of the gardens seems to be a cultivated and less tomentose state) is the most peculiar, and may perhaps rank as a species; but it differs only in the much more copious pubescence. The leaves of the growing shoots are as large as in C. tomentosa, very broad, and mostly cordate, and the pubescence is nearly permanent on the veins of the lower surface.—*White Thorn.*

6. *C. tomentosa* (Linn.): leaves ovate-elliptical or oval, abruptly narrowed at the base into a short margined petiole, somewhat plicate or furrowed above from the impressed veins, mostly acute, doubly serrate, mostly incisely toothed towards the apex, somewhat glabrous above, the lower surface especially the veins softly pubescent-tomentose when young; spines rather large; corymbs large; the peduncles and calyx villous-tomentose;

segments of the calyx linear-lanceolate; styles mostly 3; fruit (orange-red) pyriform.—*Linn.! spec.* 1. *p.* 476 (excl. syn. *Gronov.*); *Duroi, harbk.* 1. *p.* 183. C. pyrifolia, *Ait.! Kew.* (*ed.* 1.) 2. *p.* 168; *Willd. l. c.; Pursh, fl.* 1. *p.* 337; *Seringe, in DC. l. c.; Loudon, arb. Brit. t.* 31 (β.); *Lindl.! bot. reg. t.* 1877. C. leucophæos, *Mœnch, hort. Weiss. t.* 2, ex *Ait.* C. latifolia, *Pers. syn.* 1. *p.* 36. C. lobata, *Bosc.! in DC. l. c.* C. flava, *Hook. fl. Bor.-Am.* 1. *p.* 202? (excl. syn.); *Darlingt. fl. Cest. p.* 292. Mespilus Calpodendron, *Ehrh. beitr.* 2. *p.* 67. M. latifolia, *Poir. dict.* (ex spec. *hort. Par.*); *Spach! l. c.* M. cornifolia, *Poir. l. c.?* Mespilus pyrifolia, *Willd.! enum.* 1. *p.* 523.

β. leaves strongly furrowed, nearly glabrous, smaller.

Swampy thickets &c. Canada! and New England States! to Indiana! Kentucky! and S. Carolina towards the mountains. β. Bellows Falls, Vermont, and near Auburn, New York, *Mr. John Carey!* May–June.—Shrub 10–20 feet high, with large fragrant flowers. Leaves mostly large, 3–5 inches in length and 1–3 in breadth, (the petiole margined quite to the base), seldom fascicled, falling early in autumn, the upper surface pubescent with very short appressed hairs, glabrous when old; clothed beneath with a short velvety tomentum, which is mostly persistent and often somewhat rusty on the veins. Corymb large, leafy. Segments of the calyx as long as the ovary, pectinately serrate and glandular. Fruit obovoid or globose-pyriform, rather large, eatable but rather insipid.—We have restored the Linnæan name to this species, which is by no means inapplicable to the more common forms. It was wrongly referred to C. parvifolia by Willdenow, and appears to have been overlooked by succeeding authors. It was described from the specimen in his own herbarium; but the synonym of Gronovius belongs to Amelanchier Canadensis. Our more glabrous and smaller-leaved forms approach C. punctata, but certainly belong to the present species. The figure in the Botanical Register well represents the ordinary form.

7. *C. punctata* (Jacq.): leaves obovate-cuneiform, decurrent into a slender petiole, entire near the base, doubly serrate and often somewhat incised towards the apex, somewhat plicate from the strongly marked straight veins, pubescent with appressed hairs when young, especially on the veins beneath; spines stout, often wanting; corymbs and calyx villous-pubescent when young; styles 3 (often 1–2); fruit (dull red or yellowish) dotted, globose.—*Jacq.! hort. Vindob.* 1. *p.* 10, *t.* 28; *Ait.! Kew.* (*ed.* 1.) 2. *p.* 169; *Willd.* (?) *l. c.; Michx.! fl.* 1. *p.* 289; *Torr.! fl.* 1. *p.* 476; *Seringe, l. c.?* C. Crus-galli, *Wang. Amer.* ex *Willd.* C. latifolia, *Seringe! in DC. l. c.*, not of *Poir.* Mespilus punctata, *Spach! l. c.* M. cuneifolia, *Ehrh. beitr.* 3. *p.* 21. (ex descr.)

Borders of woods, Canada! and throughout the United States! very common in the northern portions. May.—Tree 12–25 feet high (the trunk sometimes 6–8 inches in diameter near the base), with numerous rugged spreading ash-colored branches. Leaves light green, membranaceous, but rather thick and firm, 2–3 inches in length, but often much smaller and fascicled; the veins passing straight from the midrib to the margin, impressed above, prominent beneath and usually hairy even when old. Fruit large (half an inch or more in diameter) umbilicate, eatable and rather pleasant, but tough.—Not easily confounded with any other species, except, perhaps, with some small-leaved states of C. tomentosa.—*Thorn.*

8. *C. arborescens* (Ell.): unarmed; leaves lanceolate, acute at each end, deeply serrate, glabrous on the upper surface, hairy underneath at the division of the veins, sometimes slightly lobed towards the summit; corymbs

many-flowered; calyx hairy, the segments subulate, entire; flowers pentagynous. *Ell. sk.* 1. *p.* 550.

Near Fort Argyle on the Ogeechee River (Georgia), *Elliott.* New Orleans, *Drummond!* Rio Brazos, Texas, *Berlandier!* March–April.—There seems to be no specimen of Elliott's plant in his herbarium. He describes it as a small tree, 20–30 feet high, with leaves resembling those of C. pyrifolia (C. tomentosa, *Linn.*) but smaller, less distinctly plaited, and glabrous. To this species we refer, with some confidence, the Cratægus marked no. 103 in Drummond's New Orleans collection (named "C. punctata, in fl. foliis angustioribus," in Hooker and Arnott's account of these plants); and we have the same species from Texas. The specimens are unarmed, and have the same ash-colored bark with C. punctata; but the leaves are smaller and narrower, not cuneiform, glabrous, not at all plaited or furrowed; the flowers also much smaller, in fewer-flowered corymbs, on filiform less hairy pedicels. It appears to be a very distinct species. "No. 103 bis, in fruit," of the same collection, is perhaps the same plant: the fruit is quite small (about one-fourth of an inch in diameter), globose or a little depressed, and apparently red.

9. *C. apiifolia* (Michx.): leaves deltoid, somewhat cordate, pubescent, on long and filiform petioles, deeply and pinnately 5–7-cleft or parted, the segments incisely lobed and serrate; spines stout; corymbs villous-pubescent, somewhat simple, rather few-flowered; segments of the calyx lanceolate; styles 2–3; fruit . . . . . small (scarlet).—*Michx.! fl.* 1. *p.* 287; *Pursh! fl.* 1. *p.* 336; *Nutt.! gen.* 1. *p.* 305; *Ell. l. c.; Seringe! in DC. l. c.; Loudon, arb. Brit. l. c.* C. Oxyacantha, *Walt.! Car. p.* 147.

Woods and banks of streams, Virginia! to Florida! and Louisiana! March–April.—Shrub 4–12 feet high, much branched, and well adapted for hedges. Leaves fascicled, on very long petioles. Flowers small. Segments of the calyx usually glandular-serrate.

10. *C. cordata* (Ait.): glabrous, destitute of glands; leaves mostly deltoid-ovate and subcordate, on long and slender petioles, acuminate, incised and serrate, mostly 3-lobed near the base; spines slender; segments of the calyx very short, glandless; styles 5; fruit very small, depressed-globose (bright reddish-purple).—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 168; *Willd.! spec.* 2. *p.* 1000; *Pers. syn.* 2. *p.* 36; *Ell. l. c.; Seringe! in DC. l. c.; Lindl.! bot. reg. t.* 1151. C. populifolia, *Walt. Car. p.* 149; *Pursh, fl.* 1. *p.* 337; not of *Ell.* Mespilus cordata, *Mill.! dict. ic. t.* 179; *Willd.! enum.* 1. *p.* 523. M. acerifolia, "*Burgsdorf*"; *Lam. dict.* 4. *p.* 442. M. corallina, *Poir.* (v. sp. *hort. Par.*) M. Phænopyrum, *Ehrh. l. c.* 2. *p.* 67.

Banks of rivers &c. Virginia! to Georgia! near the mountains. June.—Stem 15–20 feet high, armed with long very slender and sharp spines. Leaves 1 to 2 or more inches in length, opaque, very glabrous except the veins above, which are minutely pubescent, often deeply and equally 3-lobed like Acer rubrum, sometimes with a slightly rhombic outline and a little tapering at the base: a few glands are occasionally observed on the leaves of the vigorous branches. Lobes of the calyx pubescent within, very broad, deciduous. Fruits numerous, scarcely larger than the common currant; the carpels naked at the summit.—According to Dr. Darlington (*fl. Cest. p.* 293) this species was introduced into Chester County, Pennsylvania, from the neighborhood of Washington City, and is much employed for hedges, under the name of *Washington Thorn.*

11. *C. spathulata* (Michx.): glabrous, destitute of glands; leaves rather coriaceous and shining, cuneiform or oblong-spatulate, crenate; the lower ones fascicled, very small, spatulate, much attenuate at the base, nearly sessile, sometimes 3-lobed at the summit; those of the young sterile branches

scattered, often much larger, roundish, variously lobed or incised, attenuate into a more or less margined petiole; segments of the calyx triangular-ovate, very short, glandless; styles 5; fruit very small (bright red) ovoid-globose.—*Michx.! fl.* 1. *p.* 288; *Pers. l. c.; Ell. sk.* 1. *p.* 552; *Loudon, arb. Brit. t.* 31; *Hook. & Arn.! compan. to bot. mag.* 1. *p.* 25. (excl. remark concerning the fruit); not of *Pursh, Seringe*, or *Lindl.* C. microcarpa, *Lindl.! bot. reg. t.* 1846.* Mespilus spathulata, *hort. Par.! Spach! l. c.*

Virginia! to Georgia! Florida! Louisiana! Arkansas! and Texas! not uncommon. May–June.—Shrub, or small tree, 12–15 feet high; the leaves of the flowering branches fascicled on short lateral spurs, all greatly inclined to vary in form; those of the sterile and vigorous branches sometimes 2 inches in length and breadth, 3-cleft or undivided. Spines few and short. Flowers small and numerous, in nearly simple glabrous corymbs. Fruit smaller than in C. cordata; the carpels thin and scarcely bony.

* * *Corymbs simple, few-* (1–6-) *flowered.*

12. *C. æstivalis:* flowers appearing rather before the leaves; spines few or none; leaves elliptical or oblong-cuneiform (those of the sterile branches often obovate), slightly petioled, somewhat sinuate-toothed or angled towards the summit, or irregularly crenate, rarely 3-lobed or incised, tomentose when young, at length glabrous above, clothed especially along the veins beneath with a rusty pubescence; corymbs 3–5-flowered, glabrous; flowers rather large; segments of the calyx short, triangular, glabrous, glandless; styles 4–5; fruit (red) very large, globose.—*Walt. Car. p.* 148 (under Mespilus.); *Ell. l. c.* (under C. elliptica.) C. opaca, *Hook. & Arn.! compan. to bot. mag.* 1. *p.* 25. C. nudiflora, *Nutt.! mss.*

β. leaves at length glabrous, except the midrib beneath, shining above.—C. lucida, *Ell. l. c.?* not of *Wang.*

Along the low wet banks of ponds and rivers, S. Carolina! and Georgia! to Florida! Louisiana! and Arkansas! Feb.–March.—Stems branching from the base, often 20–30 feet high. Leaves 2–3 inches in length when mature; the margin sometimes a little sinuate or angled and scarcely serrate, sometimes irregularly crenate, occasionally a little glandular. The fruit ripens in April and May or June: it is half an inch or three-fourths of an inch in diameter, quite juicy, of an agreeable acid taste, and is much esteemed for making tarts, jellies, &c.—*May Haw. Apple-Haw.*

13. *C. flava* (Ait.): leaves obovate-cuneiform or somewhat rhomboid, acute at the base, attenuate into a glandular petiole, serrate, mostly incised or slightly lobed towards the apex, glabrous; spines straight or arcuate; corymbs 1–4-flowered; pedicels and calyx glabrous; flowers large; styles 4–5; fruit large (greenish-yellow), turbinate or pyriform.—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 169; *Pursh! fl.* 1. *p.* 338; *Seringe, l. c.; Loudon, arb. Brit.* 3. *p.* 823, *t.* 31 (*L*); *Lindl.! bot. reg. t.* 1939; not of *Ell.* nor *Hook.*? C. flava, *β.* lobata, *Lindl.! bot. reg. t.* 1932. C. lobata, *Loudon, l. c.*, not of *Bosc?* C. glandulosa, *Ait.! l. c.*, not of *Mœnch, Willd.* nor *Michx.* C. Carolini-

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* Pursh, who altogether mistook Michaux's plant, added to the character of C. spathulata the phrase "*corymbis paucifloris, pedicellis brevibus, calycibus tomentosis*"; which is copied in De Candolle's Prodromus. Dr. Lindley's criticisms on some manuscript observations of one of the authors of this work respecting the species in question (in the Botanical Register, fol. 1957) proceed on the supposition that this interpolated phrase forms part of the specific character given by Michaux.

ana, *Pers. l. c.* C. turbinata, *Pursh, l. c.* 2. *p.* 725. Mespilus flexispina, *Mœnch, hort. Weiss. t.* 4, ex *Ait.* M. Caroliniana, *Poir. l. c.*

In sandy shady places, Virginia to Florida! May.—Tree 15–20 feet high. Leaves 2–3 inches long; the margins, as well as of the stipules, bracts, calyx-segments, &c. often marked with round dark glands, as in numerous other species. Flowers as large as those of C. coccinea, or even larger. Fruit yellow or greenish-yellow, scanty, not well-flavored.—Well distinguished by the form and color of the fruit, and the few (large) flowers. The C. flava and C. glandulosa of Aiton (fide spec. in *herb. Banks*) differ only in the thorns, which are large and stout in the latter, and slender in the former species. The leaves, petioles, calyx, &c. of this and the following are commonly more glandular than in the other species.

14. *C. elliptica* (Ait.): leaves oval-obovate or roundish, cuneate at the base, or abruptly narrowed into a margined glandular petiole (coriaceous), shining above, finely serrate, incisely toothed and often slightly lobed towards the apex, pubescent when young; spines long and slender; corymbs 3–6-flowered, and, with the calyx and young branches, tomentose-pubescent; flowers small; pedicels short; segments of the calyx incised or serrate; styles 5; fruit subglobose, rather large (red).—*Ait.! Kew.* (*ed.* 1) 2. *p.* 168; *Seringe, l. c.?* not of *Ell.* C. glandulosa, *Michx.! fl.* 1. *p.* 288, not of *Ait.* or *Willd.* C. Michauxii, *Pers. syn.* 2. *p.* 38. C. viridis, *Walt.* ex *Ell.: also* "Summer Haw," *Ell.! l. c.* under C. flava.

β. minor: leaves (smaller) broadly obovate or roundish; fruit green (always?).—C. Virginica, *Loddiges; Loudon, arb. Brit.* 3. *p.* 482, *t.* 560. C. spathulata, *Pursh, l. c.; Seringe, l. c.* (ex char.); *Lindl. bot. reg. t.* 1890, not of *Michx.!* C. parvifolia, *Willd. herb.! fol.* 2.

Virginia and N. Carolina! to Georgia! and Florida! April.—Resembles C. flava in many respects, but distinguished by the characters given above: the smaller-leaved forms bear more resemblance to C. parvifolia. In the wild state the fruit is said to be red, oval or globular, and well-flavored; but the C. Virginica bears a green pome in the English gardens, perhaps from the want of sufficient heat and light. The name imposed by Aiton is retained on account of its priority; but it is not well chosen.

15. *C. parvifolia* (Ait.): leaves spatulate-obovate or oblong-cuneiform (coriaceous), nearly sessile, crenately serrate and rarely somewhat incised towards the apex, pubescent, the upper surface at length shining and nearly glabrous; spines slender; flowers mostly solitary; the short pedicels, calyx, and branchlets, hirsute-tomentose; segments of the calyx lanceolate, incised, foliaceous, as long as the petals; styles 5; fruit roundish-pyriform (pale greenish-yellow) large, somewhat hairy.—*Ait.! Kew.* (*ed.* 1.) 2. *p.* 169; *Willd.! l. c.; Pursh! l. c.; Ell. sk.* 1. *p.* 547; *Seringe! in DC. l. c.; Darlingt. fl. Cest. p.* 291; *Loudon, arb. Brit.* 3. *p.* 841. C. uniflora, *Duroi,* ex *Ait.* C. tomentosa, *Michx.! fl.* 1. *p.* 289, not of *Linn.* Mespilus xanthocarpus, *Linn. f. suppl.* M. laciniata, *Walt. Car. p.* 147. M. axillaris, *Pers. l. c.* M. flexuosa, *Poir.! l. c.*

In sandy soil, New Jersey! to Florida! and Louisiana! April–May.—Stem 3–5 or 8 feet high, much branched, with a few long thorns. Leaves 1–2 inches in length, mostly obtuse and rounded at the summit, rough but shining above. Segments of the calyx about the length of the half-grown fruit; which when ripe is eatable, but rather dry, one-third to near half an inch in diameter, deeply umbilicate at the apex.—The serratures of the calyx-segments, bracts &c. are glandular; but the leaves have no glands.

16. *C. berberifolia:* leaves spatulate or narrowly oblong-cuneiform (those of the sterile branches often broadly obovate), decurrent by a long tapering base into a short petiole, minutely and evenly serrate toward the summit,

scabrous above, not shining, scabrous-pubescent beneath; spines wanting; corymbs (in fruit) 2–4-flowered, tomentose-pubescent; segments of the calyx small, triangular-lanceolate, entire; styles 2–4; fruit (immature) subglobose, rather large.

Prairies of Opelousas, Louisiana, *Prof. Carpenter!*—This species bears a strong resemblance to C. parvifolia; but the leaves are larger (particularly on the young branches) and much more attenuate at the base; the specimens are thornless; the corymbs often at least 4-flowered; and the calyx-segments are entire, not glandular, and not half the size of those of C. parvifolia. It forms a tree from 20–25 feet high, according to Prof. Carpenter. We have no flowers, and, although collected in July, the fruit is still unripe.

‡ *Doubtful Species.*

17. *C. unilateralis* (Pers.): leaves cuneiform or oblanceolate, obtuse, crenate, undivided, corymbs unilateral; fruit urceolate. *Pers. syn.* 2. *p.* 37.

Carolina, in *herb. Lamarck*, without flowers. *Persoon.*—It is impossible to identify this species. It is perhaps C. parviflora, or C. spathulata.

C. prunellifolia (Bosc), of which a specimen without fruit or flowers is in the herbarium of De Candolle, is as likely to be a Prunus as a Cratægus.

C. heterophylla (Flugge) is not a North American plant.

27. PYRUS. *Linn.; Lindl. in Lin. trans.* 13. *p.* 97.

Pyrus & Sorbus, *Linn.* Pyrus, Malus, & Sorbus, *Tourn.*

Calyx-tube urceolate; the limb 5-lobed. Petals roundish. Styles 5, or sometimes 2–3, distinct or often united at the base. Pome fleshy or baccate, closed: carpels 2–5, cartilaginous or nearly membranaceous. Seeds 2 in each cell: testa chartaceous or cartilaginous.—Trees or shrubs, with simple or pinnate leaves. Flowers (white or rose-color) in spreading terminal simple or compound corymbose cymes. Fruit mostly eatable.

The genus is more commonly retained in the form adopted by Lindley, in his revision of the tribe. But it will probably be again divided, perhaps as has been done by Koch. (*Fl. Germ. et Helv.*)

§ 1. *Leaves simple, not glandular: cymes simple; the pedicels mostly umbellate: petals spreading, flat: styles* (3–5) *united at the base: pome mostly globose or depressed, umbilicate at the base: carpels* (*putamen*) *cartilaginous.*—Malus, Tourn. (*Apple.*)

1. *P. coronaria* (Linn.): leaves ovate, on very slender petioles, obtuse or subcordate at the base, incisely serrate, often lobed, glabrous when old; pedicels glabrous; styles united and woolly at the base; fruit small, fragrant. —*Linn. spec.* 1. *p.* 480; *Ait.! l. c.; Willd.! spec.* 2. *p.* 1019; *DC.! l. c.; Hook.! bot. mag. t.* 2009; *Lindl.! bot. reg. t.* 651. Malus coronaria, *Mill. dict.; Michx.! fl.* 1. *p.* 292; *Michx. f. sylv.* 2. *p.* 67, *t.* 65.

Borders of woods, Michigan! (and near Lake Superior, *Dr. Pitcher!*) and western part of New York! to Louisiana, and the upper districts of S. Carolina and Georgia! sometimes cultivated. April–May.—A small tree, 10–20 feet high. Corymb few-flowered: the flowers pale rose-color, very large, fragrant: petals somewhat unguiculate. Fruit depressed-globose, (1–1½ inch in diameter) greenish-yellow and somewhat translucent when ripe, firm, extremely acid, ripe in September.—*Crab-Apple. Sweet-scented Crab-tree.*

2. *P. angustifolia* (Ait.): leaves lanceolate-oblong, often acute at the base, dentate-serrate or almost entire, glabrous, shining above; pedicels glabrous; styles distinct and glabrous; fruit small.—*Ait! Kew.* (*ed.* 1.) 2. *p.* 273; *Wats. dendrol. t.* 132; *Ell. sk.* 1. *p.* 559; *Lindl.! bot. reg. t.* 1207. P. coronaria, *Walt.*; *Wang. Amer. p.* 161, *t.* 21, *f.* 47. Malus angustifolia, *Michx.! l. c.*
Pennsylvania! to Georgia and Louisiana! March–May.—Resembles the preceding; the fruit smaller, &c.

3. *P. rivularis* (Dougl.): leaves ovate, acute, undivided or often somewhat 3-lobed, acutely serrate, pubescent, especially beneath; calyx and pedicels tomentose, or at length only pubescent; styles (3–4) glabrous, united below the middle; fruit very small, ovoid-globose (not umbilicate at the base?); the lobes of the calyx at length deciduous.—*Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 303, *t.* 68. P. diversifolia, *Bongard! veg. Sitcha, l. c. p.* 133.
Banks of streams, Oregon and N. W. Coast, *Menzies! Douglas! Dr. Scouler! Nuttall!* Sitcha, *Bongard!* April–May.—Tree 20–25 feet high. Flowers rather large. Lobes of the calyx woolly within, as in other species of this section. Fruit red or yellow (scarcely as large as a cherry, and of a pleasant flavor, *Nutt.*), used as an article of food by the Chenook Indians. The wood is very hard, capable of receiving a high polish, and is employed by the natives for making wedges. This species belongs to the section Malus, rather than to Torminaria.

Pyrus Malus (the Apple) is occasionally found in hedge-rows and neglected fields, but is scarcely naturalized in any part of the country.

Pyrus Michauxii (Bosc) is not a North American species.

§ 2. *Leaves simple: the midrib glandular along the upper side: cymes compound: petals spreading, concave: styles* (3–5) *united at the base: pome turbinate or globose: carpels* (*putamen*) *somewhat cartilaginous.*—ADENORACHIS, DC. (Aronia, *Pers.* partly.)

4. *P. arbutifolia* (Linn. f.): leaves obovate-oblong, obtuse, acute, or acuminate, crenately serrulate, attenuate into a short petiole, shining above, veiny beneath; fruit pyriform, or nearly globose when ripe.—*Linn. f.! suppl. p.* 256; *Hook.! l. c.*
α. erythrocarpa: calyx, peduncles, and lower surface of the leaves, at least when young, tomentose; fruit dark red.—*Hook.! l. c.* P. arbutifolia, *DC.! l. c.*; *Willd.! spec.* 2. *p.* 1012. P. floribunda, *Lindl. bot. reg. t.* 1006. P. depressa, *Lindl. in hort. trans.?* Mespilus arbutifolia, *Linn.! spec.* 1. *p.* 478; *Michx.! l. c.* (*α.* erythrocarpa.) Aronia pyrifolia & arbutifolia, *Pers. syn.* 1. *p.* 39. A. arbutifolia, *Ell. sk.* 1. *p.* 556; *Spach! suite Buff.* Cratægus pyrifolia, *Lam.* ex *DC.*
β. melanocarpa: calyx, peduncles, and leaves glabrous or nearly so; fruit purplish-black.—*Hook.! l. c.* P. melanocarpa, *Willd.! enum.* 1. 525; *DC.! l. c.* P. grandifolia (& pubens?), *Lindl. l. c.*, & *bot. reg. t.* 1154. Mespilus arbutifolia *β.* melanocarpa, *Michx.! l. c.* Aronia melanocarpa, *Ell. l. c.* A. arbutifolia *β.* melanocarpa, *Torr.! fl.* 1. *p.* 479. A. glabrescens, *Spach! l. c.*
In low thickets or on the borders of swamps, Canada! from Newfoundland! and the Saskatchawan! and throughout the Northern States! to

Georgia! and Louisiana! May–June. (March–April, in the Southern States.)—A low much-branched shrub, producing a profusion of white flowers, often with a tinge of purple, with purple or brownish anthers. Leaves 1–2 or sometimes 3 inches in length; the serratures mucronate with an incurved callous or glandular point; the midrib with a row of purplish glands along the upper side. Styles villous at the base. Fruit about 3 lines in diameter, turbinate when young, nearly globose and dark reddish-purple or almost black when ripe, sweetish and astringent.—Many intermediate forms between these two varieties, as we confidently consider them, occur in a wild state, and others are common in the European gardens. The glabrous form is more common in the Northern States, or on mountains.—*Choke-berry.*

§ 3. *Leaves pinnate or pinnately lobed: cymes compound: petals spreading: styles* (2–5) *distinct: pome globose or turbinate: carpels* (*putamen*) *not cartilaginous.*—SORBUS, Linn.

6. *P. Americana* (DC.): leaves pinnately 13–15-foliolate, glabrous (pubescent as well as the petiole when very young); leaflets oblong-lanceolate, acuminate, sharply serrate with mucronate teeth; cymes large, compound; fruit (bright red or scarlet) globose.—*DC.! prodr.* 2. *p.* 637; *Hook.! l. c.* Sorbus Americana, *Willd.! enum.* 1. *p.* 520; *Pursh, fl.* 1. *p.* 341; *Torr.! fl.* 1. *p.* 4[illegible]7. Sorbus aucuparia *β. Michx.! fl.* 1. *p.* 290.

β. microcarpa: fruit smaller.—P. microcarpa, *DC. l. c.* Sorbus microcarpa, *Pursh, l. c.* S. aucuparia *α. Michx. l. c.*

Shady swamps or moist woods, Pennsylvania! New York! and New England States! mostly in mountainous regions, to Labrador! Greenland? Subarctic America, and the N. W. Coast! *β.* On the high mountains of Virginia and N. Carolina! On the Grandfather Mountain, *Mr. Curtis!* May–June.—A large shrub or small tree. Flowers white. Styles 3–5. Fruit moderately acid, turning to light bright red when fully ripe, remaining on the tree during the winter.—Very nearly allied to the European P. aucuparia, and certainly not to be distinguished by the color of the fruit (which is neither purple nor fulvous when fully ripe): the more sharply serrate and acuminate leaflets may not prove a constant distinction. It is a very ornamental tree, especially in winter, on account of its large clusters of scarlet berries.—*Mountain-Ash.*

7. *P. sambucifolia* (Cham. & Schlecht.): leaves pinnately about 11-foliolate; leaflets ovate-lanceolate, sharply serrate, acuminate, hairy along the midrib and margins, bearded at the apex; stipules villous with reddish hairs. —*Cham. & Schlecht.! in Linnæa,* 2. *p.* 36; *Bongard, veg. Sitcha, l. c.*

Sitcha, *Bongard.*—Young fruit ovate. Bongard also notices a smaller-leaved variety.

28. PHOTINIA. *Lindl. in Lin. trans.* 13. *p.* 103, *& bot. reg. fol.* 1956.

Calyx 5-toothed. Petals reflexed. Ovary partly coherent with the calyx-tube (of 2 combined carpels), hairy, either completely or incompletely 2-celled: styles 2, distinct or coherent, glabrous. Pericarp included in the fleshy calyx. Testa cartilaginous.—Trees, with coriaceous and persistent entire or serrate leaves. Flowers (white) in corymbose terminal panicles. Fruit small.

§ *Ovary completely* 2-*celled.*—Euphotinea, *Lindl.*

1. *P. arbutifolia* (Lindl.): leaves oblong-lanceolate, acute, distinctly serrate; pedicels shorter than the calyx.—*Lindl.! l. c.*, & *bot. reg. t.* 491; *DC.! prodr.* 2. *p.* 631; *Hook.* & *Arn.! bot. Beechey, p.* 139, & *suppl. p.* 340. P. nudiflora & foliolosa, *Nutt.! mss.* Cratægus arbutifolia, *Ait.! Kew.* (*ed.* 2.) 3. *p.* 202.

California, *Menzies! Douglas! Nuttall!* &c.—Leaves very rigid, sharply serrate, the teeth mostly tipped with glands; the margin revolute. "Stamens about 10. Style 1; stigmas 2. Ovary tomentose, oblique, exserted beyond the calyx." *Nutt.*—By a typographical error in De Candolle's Prodromus, the pedicels are said to be longer than the calyx.

29. AMELANCHIER. *Medic.; Lindl. in Lin. trans.* 13, *p.* 100.

Calyx 5-cleft. Petals obovate-oblong or oblanceolate. Stamens short. Styles 5, more or less united. Pome 5- (or by abortion 3–4-) celled, each cell imperfectly divided by a spurious dissepiment, with a single seed in each division: endocarp cartilaginous.—Small trees or shrubs, with simple serrated leaves, and racemose (white) flowers.

1. *A. Canadensis:* leaves, as well as the racemes and calyx, tomentose-lanuginous when very young, glabrous when mature, ovate, elliptical, or oblong, sometimes cordate at the base, often slightly acuminate or mucronate; segments of the calyx triangular-lanceolate, about the length of the tube; fruit globular (edible) purplish.—Mespilus Canadensis, *Linn.! spec.* 1. *p.* 478 (excl. syn. *Gronov.*); *Michx.! fl.* 1. *p.* 291. Pyrus Botryapium, *Linn. f. suppl. p.* 255.

α. *Botryapium:* arborescent; leaves ovate-oblong, very sharply serrate, mostly subcordate when young, acuminate and cuspidate; petals oblong, four times the length of the calyx.—Mespilus Canadensis β. cordata, *Michx. l. c.* M. arborea, *Michx. f. sylv.* 1. *p.* 336. *t.* 66. Pyrus Botryapium, *Willd.! spec.* 2. *p.* 1013; *Pursh, l. c.* Cratægus racemosa, *Lam. dict.* 1. *p.* 74. Aronia Botryapium, *Pers. syn.* 1. *p.* 39; *Ell. sk.* 1. *p.* 557. Amelanchier Botryapium, *DC.! prodr.* 2. *p.* 632. A. Botryapium, & ovalis, *Hook.! fl. Bor.-Am.* 1. *p.* 202.

β. *oblongifolia:* shrubby; leaves oval-oblong, mucronate, serrate with short acute teeth, the tomentum of the lower surface often remaining during flowering; racemes shorter; flowers smaller; petals obovate-oblong, about thrice the length of the calyx.—Mespilus Amelanchier? *Walt. Car. p.* 148. M. Canadensis α. obovalis, *Michx.?* Amelanchier ovalis, *Hook.! l. c.* (partly.) A. intermedia, *Spach! suite Buff.*

γ. *rotundifolia:* shrubby or arborescent; leaves roundish-oval, often somewhat acuminate or cuspidate, very sharply serrate; racemes 6–10-flowered; petals narrowly oblong, rather small.—M. Canadensis γ. rotundifolia, *Michx. l. c.* Pyrus ovalis, *Willd.! l. c.* (partly.) P. sanguinea, *Pursh, fl.* 1. *p.* 340? Aronia ovalis, *Pers. l. c.; Ell. l. c.* Amelanchier ovalis, *DC.! l. c.*

δ. *alnifolia:* shrubby or arborescent; leaves roundish or broadly elliptical, very obtuse or retuse at each end, serrate near the summit only; racemes densely-flowered; petals linear-oblong, 3–4 times the length of the calyx; stamens very short.—Aronia alnifolia, *Nutt.! gen.* 1. *p.* 306. Amelanchier alnifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 22. A. ovalis β. semiintegrifolia, *Hook.! l. c.* A. florida, *Lindl.! bot. reg. t.* 1589.

ε. *pumila:* "dwarf; leaves small, roundish-oval, obtuse at both ends, coarsely and sharply serrate from near the base, glabrous when young; petals oblong, about twice the length of the calyx." A. pumila, *Nutt.! mss.*

ζ. *oligocarpa:* shrubby; leaves mostly glabrous even when young, narrowly oval or oblong, cuspidate, finely and sharply serrate; racemes 2–4-flowered; petals obovate or obovate-oblong, about twice or thrice the length of the calyx.—Mespilus Canadensis δ. oligocarpa, *Michx.! l. c.* Pyrus sanguinea, *Pursh, l. c.?* Aronia sanguinea, *Nutt. l. c.* Amelanchier sanguinea, *DC. l. c; Lindl. bot. reg. t.* 1171; *Hook.! l. c.*

Along streams and in swampy grounds, sometimes in dry rocky places, throughout the United States! and Canada! to Newfoundland! and Subarctic America. δ. Northern and Western States! to Oregon! ε. Near the sources of the Platte in the Rocky Mountains, *Nuttall!* ζ. Wet mountain swamps, New York! and New England States! to Newfoundland! Labrador! Hudson's Bay! Saskatchawan! &c. April–May. (February and March in the Southern States.)—Fruit red, turning blackish-purple when fully ripe, somewhat pruinose, sweet, ripening in July and August: it is used by the aborigines in the Northern regions as an article of food. Numerous forms intermediate between those here described constantly occur, rendering it impossible to distinguish any of them as species, although the last mentioned is the most peculiar. Indeed, except in the shorter and less subulate calyx-segments, it is difficult to distinguish the American species from A. vulgaris.—*Shad-flower.*

30. PERAPHYLLUM. *Nutt. mss.*

"Calyx-tube urceolate; the limb 5-lobed. Petals 5, broadly obovate, unguiculate. Stamens about 20, exserted. Styles 2, rarely 3, coherent below. Pome (small, nearly dry,) containing 2 (rarely 3) almost distinct carpels, each 2-celled by a spurious dissepiment; the cells 1-seeded: endocarp cartilaginous. Seeds angular, compressed: testa cartilaginous.—A low exceedingly branched shrub, with rigid lanceolate much crowded leaves terminating the branchlets. Corymbs 2–4-flowered: petals white?"

P. ramosissimum (Nutt.! mss.)

"Dry hill-sides near the Blue Mountains of the Oregon. An exceedingly branched shrub, 4–6 feet high, with hard white wood and greyish bark. Branches short and tortuous, not thorny, covered with circular scars, the cicatrices of the fallen clustered leaves. Leaves linear-lanceolate, acute, an inch or more in length, entire or obsoletely serrulate, smooth and shining above, very minutely pubescent beneath. Stipules obsolete. Calyx urceolate, the tube wholly adnate to the ovary; the border small; segments reflexed, tomentose within. Styles filiform, thickened towards the summit, longer than the stamens, united and pubescent below. Fruit nearly globose, about the size of a pea, dry (perhaps not always so, somewhat gelatinous when steeped), with a brownish yellow vesicular epidermis: carpels conic, pubescent along the inside nearly to the base. Seeds dark brown, about half the size of those of the Apple, but with a rather thicker testa, gibbous and somewhat triangular, compressed at the sides. Seed erect. Radicle at the base of the seed." *Nutt.*—Mr. Nuttall compares this curious plant with Purshia, which it is not unlike in habit. Its nearest affinity is doubtless with Amelanchier, but it forms a very distinct genus. We have not seen flowering specimens.

ORDER L. CALYCANTHACEÆ. *Lindl.*

Sepals and petals indefinite, confounded, combined in a fleshy tube: æstivation imbricated. Stamens indefinite, inserted on the fleshy border at the mouth of the tube, the inner sterile: anthers adnate, extrorse. Ovaries several, with a terminal style, inserted on the inner surface of the concave disk or torus which lines the tube of the calyx: ovules solitary, or 2 one above the other, ascending. Achenia enclosed in the fleshy tube of the calyx, 1-seeded. Seed solitary, anatropous, without albumen. Cotyledons convolute.—Aromatic shrubs (natives of North America and Japan); the stems at length having four imperfect external axes of growth. (Cf. *Mirbel, in ann. sci. nat.* 14, *t.* 13.) Leaves opposite, scabrous, entire, without stipules. Flowers axillary and terminal, solitary.

1. CALYCANTHUS. *Linn.; Lam. ill. t.* 445; *Lindl. bot. reg.* (1819.)

Lobes of the calyx imbricated in several series, lanceolate, colored, all more or less coriaceous or fleshy. Stamens unequal, deciduous, about 12 of the outer ones fertile.—Shrubs (North American); the bark and leaves exhaling a camphoric odor. Flowers lurid purple, expanding after the leaves.—*Carolina Allspice. Sweet-scented Shrub.*

1. *C. floridus* (Linn.): leaves oval or ovate-lanceolate, often pubescent or tomentose beneath; peduncles very short.

α. leaves oval, mostly acute or acuminate, tomentose beneath,, as well as the branchlets; branches spreading.—C. floridus, *Linn.! spec. ed.* 2. *p.* 718; *Bot. mag. t.* 503; *Michx.! fl.* 1. *p.* 305; *Willd.! hort. Berol.* 1. *p.* 80; *Nutt.! gen.* 1. *p.* 312; *Ell. sk.* 1. *p.* 576; *Guimp. Otto, & Hayne, holz. t.* 4; *DC. prodr.* 3. *p.* 3. C. sterilis, *Walt.*

β. inodorus: "segments of the calyx linear-lanceolate, pubescent; leaves lanceolate, scabrous and shining on the upper, smooth on the lower surface; branches expanding." *Ell.*—C. inodorus, *Ell. sk.* 1. *p.* 576.

γ. lævigatus: leaves oblong or ovate-lanceolate, gradually acute or acuminate, glabrous beneath; branches erect.—C. lævigatus, *Willd.! hort. Berol. t.* 80; *Nutt.! gen.* 1. *p.* 312; *Ell. l. c.*; *Guimp. Otto, & Hayne, l. c. t.* 6; *DC. l. c.* C. fertilis, *Walt.* C. ferax, *Michx.! l. c.* (Varies with the leaves scabrous and sometimes almost smooth above.)

δ. glaucus: leaves oblong or ovate-lanceolate, gradually acuminate, glaucous and glabrous or somewhat pubescent beneath; branches spreading.—C. glaucus, *Willd.! hort. Berol. p.* 80; *Nutt.! l. c.*; *Ell. l. c.*; *Guimp. Otto, & Hayne, holz. t.* 5; *DC. l. c.*

Hill-sides, and in fertile soil along rivulets, Virginia! to Georgia! nearly confined to the vicinity of the mountains (common in gardens). March–June.—We have arranged the several species of Willdenow and Elliott as varieties of C. floridus, it appearing to us that they do not offer sufficient and constant characters, although they doubtless preserve their characteristics when propagated by cuttings. They are said seldom to ripen their fruit in their native situations.

2. *C. occidentalis* (Hook. & Arn.): leaves ovate-lanceolate, somewhat cordate at the base, acuminate, rigid, scabrous, glabrous and shining, and of the same color on both sides; peduncles elongated.—*Hook. & Arn.! bot. Beechey, suppl. p.* 340, *t.* 84.

California, *Douglas!* (v. sp. *in herb. Hook.*)—Leaves about 6 inches long and 2 in width. Peduncles terminal, or from the forks of the branches, 2–3 inches in length when the flower is expanded.

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‡ ORDER (LI.) MYRTACEÆ. *Juss.*

We have received from Southern Florida very imperfect specimens of two or three Myrtaceous plants, probably species of Eugenia; but have not sufficient materials for their identification.

ORDER LII. MELASTOMACEÆ. *Juss.*

Sepals combined into a 4–6-lobed persistent calyx; the tube urceolate, cohering more or less with the angles of the ovary. Petals equal in number with the lobes of the calyx and alternate with them, inserted on its throat: æstivation twisted. Stamens as many as the petals and alternate with them, or more commonly twice as many, those opposite the petals often differently shaped and sterile: filaments inflexed in æstivation: anthers adnate or fixed by the base, introrse, 1–2-celled, often appendiculate, usually opening by one or two terminal pores; before flowering contained in the tubular interstices formed by the cohesion of the ovary with the nerves of the calyx. Ovary 3–6-celled, with the placentæ in the axis, large and thick: ovules indefinite: style 1: stigma capitate or minute. Fruit capsular and then at length nearly free from the persistent tube of the calyx, the dehiscence loculicidal; or baccate and wholly coherent with the calyx, 3–6-celled. Seeds very numerous, minute, anatropous, often curved or cochleate, destitute of albumen: testa brittle. Embryo conformed to the shape of the seed: cotyledons equal or unequal.—Herbs, trees, or shrubs (all tropical except Rhexia), with opposite mostly entire 3–9-ribbed leaves, not dotted. Stipules none. Flowers terminal, solitary or cymose.

1. RHEXIA. *Linn.; R. Br. in Tuckey's voy.* (1818) *p.* 436.

Tube of the calyx ventricose at the base, narrowed above the ovary; the limb 4-cleft, persistent. Petals 4, obovate or roundish. Anthers 8, uniform,

[illegible]

[illegible]

with a rather thick connectivum, not appendaged, 1-celled! Style somewhat declined: stigma obtuse. Capsule ~~nearly~~ free ^ from the investing calyx-tube, 4-celled; the placentæ much projecting into the cells. Seeds cochleate; the hilum very large.—Perennial herbs. Leaves mostly sessile, 3-nerved, ciliate-serrulate or entire. Flowers showy, purple or yellow; the petals rather caducous.

The one-celled anthers of Rhexia were pointed out to us by Mr. Brown; who many years since stated that the genus should be restricted to the North American species, but without mentioning its distinctive marks. The anthers become one-celled by the obliteration of the partitions: at an early period we find four parallel cells. The species are nearly confined to the vicinity of the sea-board.

§ 1. *Anthers long and linear, arcuate, more or less produced or saccate at the base; the connectivum furnished with a minute setaceous process at the insertion of the filament: style somewhat curved above: tube of the calyx mostly elongated and campanulate-infundibuliform above the ovary: leaves lanceolate or linear: flowers purple, rarely almost white.*—Eurhexia. [illegible]

1. *R. Mariana* (Linn.): stem terete, hispid, mostly simple; leaves linear-oblong or lanceolate, attenuate at the base and slightly petioled, sparsely hispid on both sides, setaceously ciliate-serrulate; calyx hispid with scattered bristly and somewhat glandular hairs.—*Linn. spec.* 1. *p.* 346; *Lam. ill. t.* 283, *f.* 1; *Michx.! fl.* 1. *p.* 221 (excl. γ.); *Ell. sk.* 1. *p.* 437; *DC.! prodr.* 3. *p.* 121. R. Ludoviciana, *Raf.?*
Moist sandy soil, New Jersey! to Florida! and Kentucky! to Louisiana! June–Sept.—Stem 1–2 feet high, slender. Petals large, obliquely obovate, light purple, often hispid externally.

2. *R. lanceolata* (Walt.): stem nearly terete, much branched, hirsute; leaves linear or lanceolate, attenuate at the base and slightly petioled, slightly hispid on both sides, setaceously ciliate-serrulate; calyx glabrous.—*Walt. Car. p.* 129; *Poir. suppl.?* R. Mariana γ. exalbida, *Lam. ill. t.* 288, *f.* 3; *Michx.! l. c.* R. angustifolia, *Nutt.! gen.* 1. *p.* 244; *Ell. l. c.*; *DC.! l. c.*
Damp soil, N. Carolina! to Florida! and Louisiana. June–Aug.—Stems 1–2 feet high, growing in large clusters or patches, very leafy. Flowers numerous, smaller than in R. Mariana, pale purple or nearly white.

3. *R. Virginica* (Linn.): stem sparsely hispid, quadrangular, the angles narrowly winged; leaves oval-lanceolate, acute, sparsely hispid above and on the ribs of the lower surface, serrulate-ciliate; calyx hispid, the tube above the ovary longer than the segments.—*Linn.! spec.* 1. *p.* 346; *Lam. ill. t.* 283, *f.* 2; *Michx.! l. c.*; *Bot. mag. t.* 968; *Ell. l. c.*; *DC.! prodr.* 3. *p.* 121. R. septemnervia, *Walt. Car. p.* 130.
Moist places, Massachusetts! and Connecticut! near the coast, to Louisiana! and Arkansas! July–Sept.—Leaves sometimes 5–7-ribbed, longer than the internodes. Flowers large, numerous: petals often hispid externally.—*Deer-grass.*

4. *R. stricta* (Pursh): glabrous; stem (tall) quadrangular, the angles strongly winged, minutely bearded at the nodes; leaves ovate-lanceolate, gradually acuminate, setaceously serrulate, often slightly hispid above; calyx glabrous, the tube scarcely prolonged above the ovary.—*Pursh, fl.* 1. *p.* 258; *DC. l. c.*

Georgia! Alabama! and Florida! (on the margin of pine-barren ponds, generally in water, *Dr. Chapman*). Aug.–Sept.—Stem 3–4 feet high. Leaves (two inches or more long) about the length of the internodes, the lowermost ovate, the uppermost narrowly lanceolate. Flowers resembling R. Virginica.

5. *R. glabella* (Michx.): stem nearly terete, simple, and, as also the leaves, glabrous, slightly glaucous; leaves lanceolate, entire or very minutely denticulate, rather thick, obscurely 3-nerved, veinless; calyx glandular-hispid.—*Michx.! fl.* 1. *p.* 222; *Nutt.! gen.* 1. *p.* 244; *Bonpl. Rhex. t.* 44; *Ell. sk.* 1. *p.* 438; *DC. l. c.*

β. leaves somewhat ovate. *DC.*—R. Alifanus, *Walt. Car. p.* 131?

Damp woods, N. Carolina! to Florida! Alabama! and Louisiana! June–Aug.—Stem 2–3 feet high. Leaves about the length of the internodes, sweet to the taste. Calyx infundibuliform-campanulate above the ovary. Petals very large, pale purple, glandular externally before their expansion. —*Deer-grass.*

§ 2. *Anthers oblong, straight, with no setaceous process at the insertion of the filament (sometimes with a very minute obsolete spur): tube of the calyx short and campanulate above the ovary: leaves ovate, small: flowers sessile, (few) violet-purple.*—Calorhexia.

6. *R. ciliosa* (Michx.): stem simple, quadrangular, glabrous; leaves broadly ovate, slightly petioled, glabrous beneath, sparsely hispid above, the margin serrulate and ciliate with long spreading bristles; flowers nearly sessile, 1–3 together, involucrate by the upper pair of leaves; calyx glabrous, the lobes acute.—*Michx.! fl.* 1. *p.* 221; *Nutt.! gen.* 1. *p.* 343; *Pursh, fl.* 1. *p.* 258, *t.* 10; *Ell. sk.* 1. *p.* 348; *DC.! prodr.* 3. *p.* 122. R. petiolata, *Walt. Car. p.* 130?

Damp pine-barrens, Delaware? and N. Carolina! to Florida! and Western Louisiana! June–Aug.—Stem simple, 1–2 feet high. Flowers large (1½ inch in diameter when the petals are fully expanded): the calyx wholly glabrous, or with a few scattered caducous hairs.

7. *R. serrulata* (Nutt.): small; stem quadrangular, glabrous, simple; leaves (very small) ovate or oval, slightly petioled, glabrous on both surfaces, serrulate and ciliate with long spreading bristles; flowers somewhat pedicelled, 1–3 together; calyx glandular-hispid, the teeth obtuse.—*Nutt.! gen.* 1. *p.* 243; *DC. l. c.*

Open swamps, Georgia! to Florida! June–July.—Stem 6–10 inches high. Leaves scarcely half an inch in length, much shorter than the internodes. Flowers smaller than in the preceding species, but large for the size of the plant; the calyx more constricted above the ovary.

§ 3. *Anthers linear-oblong, straight and erect, with no process at the insertion of the filament: calyx much constricted immediately above the ovary, the upper portion campanulate: stems brachiately branched: leaves linear: flowers yellow.*—Rhexantha.

8. *R. lutea* (Walt.): stem quadrangular, sparsely hispid; leaves linear and oblanceolate, rather thick, obscurely ribbed, entire, the surface and margins beset with scattered bristles, the uppermost mucronate with a long bristle; calyx smooth and shining, or hispid with a few scattered bristles; the teeth cuspidate.—*Walt. Car. p.* 130; *Michx.! fl.* 1. *p.* 222; *Pursh, fl.* 1. *p.* 258, *t.* 10; *Nutt. gen.* 1. *p.* 244; *Ell. sk.* 1. *p.* 440; *DC.! l. c.*

Damp pine barrens, N. Carolina! to Florida! and Louisiana! June–Aug.—Flowers rather small: petals setaceously mucronate.

R. linearifolia (Poir.) is Ludwigia alternifolia, fide *DC.*

ORDER LIII. LYTHRACEÆ. *Juss.*

Sepals combined into a 4–7-toothed or lobed calyx; the lobes valvate or distant in æstivation; the sinuses sometimes produced into accessory lobes or processes. Petals alternate with the proper lobes of the calyx and inserted on its throat, very deciduous, sometimes wanting. Stamens inserted into the tube of the calyx below the petals, equal to them in number, or 2–4 times as many, rarely fewer: anthers short, introrse. Ovary enclosed in but free from the calyx, 2–4-celled, with numerous ovules in each cell; the placentæ in the axis: style filiform, sometimes short or almost none: stigma usually capitate. Capsule membranaceous, surrounded by the calyx, often 1-celled by the obliteration of the dissepiments, dehiscent either longitudinally or irregularly. Seeds numerous and small, or rarely few and large, anatropous, destitute of albumen. Cotyledons flat and foliaceous.—Herbs, rarely shrubs or trees, with usually 4-sided branches, and opposite or seldom alternate entire exstipulate leaves, without glands or dots. Flowers axillary, or (by the reduction of the leaves) in terminal racemes or spikes.

Lagerstrœmia Indica occurs in Drummond's New Orleans collection; but the plant has probably escaped from the gardens.

1. HYPOBRICHIA. *M. A. Curtis, mss.* (1836)

A,

Ptilina, *Nutt. mss.* (1838)

Calyx hemispherical-campanulate, not bracteolate at the base, 4-lobed: accessory teeth none or mere callous points. Petals none. Stamens 2–4. Ovary globose, 2-celled: style almost none: stigma 2-lobed. Capsule globose, very thin and membranous, 2-celled, bursting irregularly: placenta globose, thick. Seeds numerous (rather large for the size of the capsule), obovate-oblong, ascending; the testa membranaceous.—A submersed aquatic herb (with somewhat the habit of Callitriche autumnalis), with opposite and crowded linear pellucid leaves, and minute axillary sessile flowers.

Except in its peculiar habit, this plant differs very little from Ammannia. Mr. Curtis sent us specinens several years since, under the present name, and with an accurate description; but he was not aware of its identity with the Peplis diandra of Nuttall.

H. Nuttallii.—Peplis? diandra, *Nutt.! in DC. prodr.* 3. *p.* 77. Ptilina aquatica, *Nutt.! mss.*

In slow-flowing streams and ponds, Arkansas, *Nuttall!* Texas, *Drummond!* Lincolnton, N. Carolina, *Mr. Curtis!* Illinois, *Mr. Buckley!* June–Aug.—Stems 1–2 feet in length, very leafy, wholly immersed, or with the summit floating. Leaves about an inch long, narrowly linear, acute; the uppermost, when floating, rather shorter and broader, obtuse, indistinctly veined. Flowers not larger than a pin's head. Calyx slightly plaited between the lobes. Stamens 2, or frequently 4, shorter than the calyx.

2. AMMANNIA. *Houst. in Linn. gen.; Lam. ill. t.* 77; *W. & Arn. prodr. Ind. Or.* 1. *p.* 304 (excl. § 1 & 5?)

Calyx more or less campanulate, 4–5-toothed or lobed; the sinuses usually expanding into spreading accessory teeth or horns. Petals as many as the lobes of the calyx, or often wanting. Stamens as many or sometimes twice as many as the lobes of the calyx. Ovary 2–4-celled: style short, or rather long: stigma capitate. Capsule globose or ovoid, included in the calyx, either bursting transversely or opening by valves. Seeds numerous, attached to thick central placentæ.—Herbaceous mostly glabrous annual plants, growing in wet places, with square stems, and opposite entire leaves. Flowers axillary, sessile or somewhat peduncled, bracteolate: petals small.

§ *Calyx* 4-*angled or plaited, with* 4 *short lobes and as many small spreading horn-like processes: petals* 4 (*purplish*) *caducous: stamens* 4: *capsule* 4-*celled.*—AMMANNIA *proper*, Arn.

1. *A. latifolia* (Linn.): stem erect; leaves linear-lanceolate, elongated, acute, dilated and obtusely cordate-auriculate at the base, closely sessile; flowers 1–5 in each axil (somewhat pedunculate, at least when solitary); style more than half the length of the capsule.—*Linn. spec.* 1. *p.* 119; *Lam. ill. t.* 77, *f.* 1; *Willd.! spec.* 1. *p.* 678; *DC. prodr.* 3. *p.* 78; *Hook. & Arn.! in compan. to bot. mag.* 1. *p.* 46. A. ramosior, *Linn. mant. p.* 332? *Willd.! l. c.* not of *Linn. spec.*

Wet places, Illinois, *Mr. Buckley!* St. Louis, *Drummond!* Louisiana, *Dr. Ingalls!* Arkansas, *Dr. James! Dr. Pitcher!* July–Sept.—Stem 6–24 inches high, branching. Leaves 2–3 inches long; the uppermost often narrowly linear. Bracteoles minute. We suspect this also occurs in the Southern Atlantic States.

2. *A. humilis* (Michx.): stem branched from the base, ascending; leaves linear-oblong or lanceolate, obtuse, tapering at the base into a short petiole; flowers solitary in the axils of the leaves, closely sessile; style very short, or almost none.—*Michx.! fl.* 1. *p.* 99; *Ell. sk.* 1. *p.* 218; *Torr.! fl.* 1. *p.* 189; *DC.! l. c.* A. ramosior, *Linn. spec.* 1. *p.* 120; *Walt. Car. p.* 88; not of *Linn. mant. & subsequent authors.*

β. leaves mostly sessile, narrowed below, but more or less cordate-sagittate at the base; flowers about 3 in each of the lower axils, solitary above.—A. ramosior, *Michx.! l. c.* (at least partly); *Ell. l. c.; DC.! l. c.* A. purpurea, *Lam. dict.* 1. *p.* 131, fide *DC.*

In wet places, Connecticut! and New York! (near the coast) to Georgia! and Louisiana! (Also Oregon, on the Wahlamet, *Nuttall!*) *β.* New Jersey!

and Southern States. Aug.–Sept.—This species in the Northern States does not exceed 6 to 10 inches in height. We have seen no Southern specimens of our var. *β.* which in New Jersey grows in company with the A. humilis of Michaux, and the two appear to pass into each other. Linnæus established his A. ramosior wholly upon Clayton's plant, which is clearly the A. humilis, *Michx.*; but subsequently (in the Mantissa) he totally changed both the character and description, and adduces the synonym of Clayton with a mark of doubt. We cannot certainly determine whether the plant which Linnæus lastly had in view, is our variety of the present species (in which case his name, though not very applicable, should be retained), or his own A. latifolia. The latter is far most probable; since he states the flowers to be three in each axil, and the style to be longer than the ovary. Hence, to avoid confusion, we are obliged to suppress the name A. ramosior, *Linn.* —Elliott was certainly mistaken in supposing the calyx to cohere with the ovary. In the plant from Oregon, the lower leaves are sometimes alternate, and the upper 3 together.

3. LYTHRUM. *Linn.* (partly); *Juss. gen. p.* 332.

Calyx cylindrical, striate; teeth short, 4–6, usually with as many minute intermediate teeth or processes. Petals 4–6. Stamens as many or twice as many as the petals, inserted about the middle or near the base of the calyx, nearly equal. Style filiform: stigma capitate. Capsule oblong, 2-celled, many-seeded, enclosed in the calyx.—Herbs, or rarely suffruticose plants, with opposite or scattered entire leaves, and purplish or white flowers.

§ 1. *Stamens mostly equal in number with the petals: flowers solitary in the axils of the leaves* (*glabrous*).—Hyssopifolia, *DC.* (Pythagorea, *Raf.*)

1. *L. Hyssopifolia* (Linn.): annual; leaves opposite or alternate, linear or oblong, obtuse; flowers nearly sessile, shorter than the leaves; bracteoles minute or none; calyx obscurely striate; petals (pale purple) and stamens 5–6.—*Linn.! spec.* 1. *p.* 447; *Jacq. fl. Austr. t.* 133; *DC.! prodr.* 3. *p.* 81. L. hyssopifolium, *Engl. bot. t.* 292; *Bigel. fl. Bost. ed.* 2. *p.* 188.

In (salt?) marshes, Massachusetts! and New York! July.—Branches quadrangular, very slightly margined. Leaves pale green, somewhat attenuate or acute at the base. Flowers small.—This is by no means common in this country, and has perhaps been introduced. A variety of L. alatum is frequently mistaken for it.

2. *L. alatum* (Pursh): perennial; stem and branches quadrangular, the angles margined or very slightly winged; leaves varying from oval or oblong-ovate to lanceolate, mostly acute; the lower ones opposite, ternately verticillate, or scattered; those of the virgate branches alternate; flowers slightly pedicelled or nearly sessile, minutely bibracteolate; calyx deeply striate or furrowed, the teeth shorter than the at length spreading subulate accessory processes; petals (deep violet-purple) and stamens 6.

α. leaves slightly cordate at the base, closely sessile; the upper ones about the length of the flowers.—L. alatum, *Pursh! fl.* 1. *p.* 334; *Nutt. gen.* 1. *p.* 303; *Bot. mag. t.* 1812; *Ell. sk.* 1. *p.* 545; *DC.! prodr.* 3. *p.* 81. L. vulneraria, *Schrank. pl. rar. hort. Monac. t.* 27, fide *DC.* L. Kennedyanum, *H. B. & K. nov. gen.* fide *DC.*

β. leaves lanceolate or elliptical, mostly opposite or whorled, acute at the base, often a little petioled, the upper ones much crowded, often shorter than the flowers.—L. virgatum? *Walt. Car. p.* 120. L. lanceolatum, *Ell. sk.* 1. *p.* 544; *DC.! l. c.*

γ. leaflets lanceolate, closely sessile; the upper ones linear, mostly opposite, about the length of the flowers.

δ. leaves lanceolate or linear-lanceolate, the upper ones much longer than the flowers.

Wet places, Upper Canada! to Louisiana! and Arkansas; but not in the New England States. γ. Texas, *Drummond!* Arkansas, *Dr. James!* July–Aug.—Stem 2–5 feet high. Flowers numerous, rather large.—A very variable species, at least in the leaves, which extends into Mexico, and has probably been described under several names.

3. *L. Californicum:* perennial, much branched; the branches quadrangular, with slightly margined angles; leaves linear, sessile, obtuse, nearly all alternate, those of the branches small, linear, about the length of the distinctly pedicellate flowers; bracteoles 1–2, minute; calyx clavate-oblong, 12-striate; the teeth very short and broad, the accessory ones obsolete; petals (violet-purple) and stamens 6.—L. lineare, *Hook. & Arn.! bot. Beechey, suppl. p.* 343, not of *Linn.*

California, *Douglas!*—Flowers nearly as large as in L. alatum; the pedicels, in fruit, about half the length of the calyx. Leaves nearly opaque.

4. *L. lineare* (Linn.): perennial; stem slender, virgate, branched at the summit, somewhat 4-angled, two or four of the angles slightly margined; leaves linear, opaque, mostly opposite; the lower ones obtuse; the upper narrow, acute, scarcely longer than the slightly pedicellate flowers; bracteoles minute; calyx obscurely striate; the teeth triangular, shorter than the erect accessory processes; petals (nearly white) and stamens 6.—*Linn.! spec.* 1. *p.* 447; *Michx.! fl.* 1. *p.* 280; *Ell. sk.* 1. *p.* 545; *DC.! prodr.* 3. *p.* 81.

Brackish swamps, New Jersey! to Florida and Louisiana. July–Sept.—Stem 3–4 feet high. Leaves slightly succulent. Flowers small.

§ 2. *Stamens twice the number of the petals: flowers numerous, and (by the reduction of the leaves to bracts) somewhat verticillate in an interrupted virgate spike.*—Salicaria, *DC.*

5. *L. Salicaria* (Linn.): leaves lanceolate, cordate at the base; flowers (large) nearly sessile, in a long spike; petals (purple) 6–7.—*Engl. bot. t.* 1061; *DC. prodr.* 3. *p.* 82; *Hook.! fl. Bor.-Am.* 1. *p.* 219. L. Salicaria β. pubescens, *Pursh, fl.* 1. *p.* 334. Salicaria spicata, *Lam. ill. t.* 408. *f.* 1.

Wet meadows, Canada! Maine! and Massachusetts! probably native. July–Aug.—The American plant, like the European, is sometimes very pubescent, but often only slightly so.—*Loosestrife.*

4. DECODON. *Gmel. syst. p.* 677; *Ell. sk.* 1. *p.* 543; *DC. prodr.* 3. *p.* 90.

Calyx short, broadly campanulate, not bracteolate at the base, with 5 erect teeth, and 5 accessory elongated spreading horn-like processes. Stamens 10; those opposite the proper teeth of the calyx very long, the alternate ones somewhat included. Style filiform: stigma small. Capsule globose, included in the calyx. Seeds numerous, minute, wingless.—A perennial herb, with recurved or reclining stems, and opposite or verticillate lanceolate entire leaves, on short petioles. Flowers axillary, purple: peduncle very short, umbellately 3–several-flowered at the summit: pedicels slender, not bracteolate.

D. verticillatum (Ell. l. c.)—D. aquaticus, *Gmel. l. c.* Lythrum verticillatum, *Linn.! spec.* 1. *p.* 446; *Michx.! fl.* 1. *p.* 281; *Pursh! fl.* 1. *p.* 334; *Torr.! fl.* 1. *p.* 471. Anonymos aquatica, *Walt. Car. p.* 137. Nesæa verticillata, *H. B. & K. nov. gen.* 6. *p.* 191.

α. *pubescens:* stem and lower surface of the leaves more or less tomentose-pubescent.

β. *lævigatum:* glabrous; leaves bright green.

Marshy places, Canada! and throughout the United States! the smooth variety occurring in the Northern, and the pubescent form in the Southern States. July–Sept.—Stems 3–8 feet in length, 4–6-sided, often prostrate and rooting at the summit. Leaves 3–5 inches long, acute at the base, gradually attenuate and acute at the summit; those of the branches often opposite, sometimes scattered. Flowers rather large, showy.

5. CUPHEA. *Jacq. hort. Vindob.* 2. *p.* 83; *DC. prodr.* 3. *p.* 83.

Calyx tubular or ventricose, gibbous or sometimes spurred at the base on the upper side, with 6 erect teeth, and usually as many accessory processes. Petals 6–7, unequal. Stamens 11–14, rarely 6–7, unequal. Ovary with a gland at the base next the gibbosity of the calyx: style filiform: stigma somewhat capitate or 2-lobed. Capsule membranaceous, 1–2-celled. Seeds several, mostly large, orbicular, compressed, wingless.—Herbs or suffruticose plants, with opposite or rarely verticillate entire leaves. Peduncles axillary or between the petioles, mostly 1-flowered. Calyx colored. Petals violet or white.

1. *C. viscosissima* (Jacq.): herbaceous, annual, viscid-pubescent; stem erect, branching; leaves ovate-lanceolate, on slender petioles, scabrous; calyx 12-ribbed, ventricose, gibbous at the base, very viscid; petals (violet) unguiculate; stamens 12; seeds few.—*Jacq. l. c. t.* 177; *Michx.! fl.* 1. *p.* 281; *Nutt. gen.* 1. *p.* 304; *DC.! prodr.* 3. *p.* 85; *Bart. fl. N. Amer.* 1. *t.* 18; *Darlingt.! fl. Cest. p.* 284. Lythrum petiolatum, *Linn.! spec.* 1. *p.* 446. L. Cuphea, *Linn. f. suppl. p.* 249.

Fields, Pennsylvania! to Georgia! and Arkansas! extending to Brazil. July–Sept.—Stem a foot or more high. Capsule, with the calyx, opening longitudinally before the seeds are ripe.

ORDER LIV. RHIZOPHORACEÆ. *R. Br.*

Sepals united into a 4–13-lobed calyx: æstivation valvate or calyptriform. Petals inserted on the calyx, alternate with its lobes, and equal to them in number. Stamens inserted with the petals, twice or several times as many: filaments distinct: anthers erect, straight or incurved. Ovary coherent with the tube of the calyx, 2-celled, or 1-celled with a central columella: ovules 2 in each cell, or several when 1-celled, pendulous. Fruit indehiscent, 1-celled. Seed pendulous, solitary: albumen none. Radicle long: cotyledons

flat.—Trees or shrubs, with simple opposite leaves, and stipules between the petioles. ***Arn.***

1. RHIZOPHORA. *Linn.; Gærtn. fr. t.* 45; *Lam. ill. t.* 396.

Tube of the calyx obovate, coherent with the ovary; the limb divided into 4 oblong persistent segments. Petals oblong, emarginate, coriaceous, conduplicate, and when young embracing the alternate stamens, the margins each with a double row of long woolly hairs. Stamens twice as many as the petals: anthers nearly sessile, large, linear-oblong. Ovary 2-celled, with 2 ovules in each cell: style conical, short, 2-furrowed: stigma 2-toothed. Fruit ovate or oblong, crowned near the base with the persistent segments of the calyx, longer than the tube, at length perforated at the apex by the radicle of the germinating embryo.—Trees, with entire leaves, and axillary inflorescence. *Arn.*

1. *R. Mangle* (Linn.): leaves obovate-oblong, obtuse; peduncles 2–3-flowered, longer than the petiole; germinating embryo subulate-clavate.—*Catesb. Car.* 2. *t.* 63; *DC. prodr.* 3. *p.* 32.

Maritime swamps of Louisiana! Florida! &c. Flowers pale yellow.—*Mangrove.*—The species of Mangrove abound on the tropical shores of the ocean; the embryo germinating while within the pericarp, takes root in the mud, and dense maritime thickets are produced.

ORDER LV. COMBRETACEÆ. *R. Br.*

Sepals united into a 4–5-lobed calyx; the limb deciduous. Petals 4–5, inserted on the calyx alternate with its lobes, often wanting. Stamens inserted with the petals, twice or sometimes thrice as many as the lobes of the calyx, or rarely equal to them in number: filaments distinct. Ovary coherent with the tube of the calyx, 1–celled, with 2–5 suspended ovules in each cell: style 1, slender: stigma simple. Fruit drupaceous, baccate, or dry and indehiscent, and often winged. Seed by abortion solitary, anatropous, without albumen. Cotyledons foliaceous, convolute or variously folded, rarely fleshy and plano-convex.—Trees or shrubs, (tropical) with alternate or opposite mostly entire exstipulate leaves. Spikes axillary or terminal.

1. CONOCARPUS. *Gærtn. fr. t.* 177; *DC. prodr.* 3. *p.* 16.

Flowers densely aggregated on a globular or oblong receptacle. Calyx-tube about the length of the ovary, or longer, persistent; the limb 5-cleft. Petals none. Stamens 5–10, exserted: anthers cordate. Ovary compressed, 2-ovuled. Fruits coriaceous and scale-like, closely imbricated, indehiscent. Cotyledons spirally convolute.—Trees or shrubs. Leaves alternate, entire. Heads of flowers peduncled.

1. *C. erecta* (Jacq.): fruits retrorsely imbricated in a subglobose head, somewhat boat-shaped, scarcely winged; tube of the calyx not produced beyond the ovary; leaves coriaceous, oval-lanceolate, mostly acute or acuminate at each end, usually with 2 glands at the base; heads panicled.—*Jacq. Amer. p.* 78, *t.* 52. (*Catesb. Car. t.* 33); *DC. l. c.*
Along the shore, Key West, *Mr. Bennett!* Southern Florida, *Dr. Hasler!* Tampa Bay, *Dr. Leavenworth!*—A shrub or small tree.

2. TERMINALIA. *Linn.; W. & Arn. prodr. Ind. Or.* 1. *p.* 312.

Flowers often polygamous from abortion. Limb of the calyx deciduous, campanulate, 5-cleft; the lobes acute. Petals wanting. Stamens 10, in a double row, longer than the calyx. Ovary 2–3-ovuled: style filiform, somewhat acute. Drupe not crowned by the calyx, often dry, indehiscent, 1-seeded. Seed almond-like. Cotyledons spirally convolute.—Trees or shrubs. Leaves alternate or rarely opposite, sometimes crowded towards the extremities of the branches. Flowers spiked: spikes racemose or panicled, bisexual in the lower part, sterile in the upper. *Arn.*

1. *T. Catappa* (Linn.): leaves about the extremities of the branches, on short petioles, obovate, cuneate and attenuated, but at the same time slightly cordate at the base, a little repand, with a large depressed gland on each side of the midrib near the base; racemes axillary, solitary, simple, shorter than the leaves; drupes oval, compressed, glabrous, with elevated navicular margins, convex on both sides. *Arn.*—*Linn. mant. p.* 519; *Lam. ill. t.* 848, *f.* 1; *DC. prodr.* 3. *p.* 11.
Southern Florida, *Dr. Hasler!*—We have the leaves only.

ORDER LVI. ONAGRACEÆ. *Juss.*

Sepals united into a tubular calyx; the limb 4- (rarely 2–3–5–6-) parted, with a valvate æstivation. Petals usually as many as the lobes of the calyx and alternate with them, inserted on the summit of the tube, with a twisted æstivation, sometimes wanting. Stamens as many or twice as many as the lobes of the calyx, or rarely half as many, inserted with the petals: filaments distinct: anthers introrse, often versatile: pollen triangular. Ovary coherent with the tube of the calyx, 2–4- (or by abortion 1–2-) celled: ovules definite or indefinite: placenta in the axis: style elongated or filiform: stigma capitate or 4-lobed. Fruit capsular with mostly loculicidal dehiscence, or dry and indehiscent, or sometimes baccate. Seeds indefinite or solitary in each cell, anatropous, destitute of albumen. Embryo straight: radicle usually longer than the cotyledons.—Herbaceous or sometimes shrubby plants, with entire or toothed (alternate or opposite) leaves. Flowers axillary, or in terminal spikes or racemes.

Tribe I. ONAGREÆ.

Petals as many (sometimes wanting in Ludwigia) and stamens twice as many (except in Eucharidium and Ludwigia) as the lobes of the calyx (which are mostly 4), regular. Pollen connected by cobweb-like threads. Ovules indefinite, rarely few and definite. Fruit capsular, or rarely dry and indehiscent.—Herbs or slightly shrubby plants.

Subtribe 1. Epilobineæ.—Calyx deciduous from the summit of the ovary after flowering. Seeds comose.—Lower leaves often opposite.

1. ZAUSCHNERIA. *Presl, rel. Hænk.* 2. *p.* 28, *t.* 52.

Tube of the calyx much produced beyond the ovary, from which it finally separates by an articulation, colored, infundibuliform, globose-inflated at the base; the segments spreading, much shorter than the tube. Petals 4, obcordate, or rather deeply 2-cleft, rather longer than the lobes of the calyx. Stamens 8, slightly exserted; the alternate ones a little shorter: filaments filiform: anthers linear-oblong, fixed by the middle. Ovary 4-celled: style filiform, erect, exserted: stigma capitate, 4-lobed. Capsule linear, short, 4-sided, imperfectly 4-celled, 4-valved. Seeds numerous, with a coma or tuft of long hairs at the chalaza.—A much branched low or decumbent canescently pubescent somewhat shrubby plant, with crowded lanceolate entire or denticulate sessile leaves, the lower ones opposite, those of the branches alternate. Flowers in loose spikes terminating the branches, large, erect-spreading, with short foliaceous bracts: calyx and petals bright red.

A remarkable genus, with flowers resembling a Fuchsia, but with the fruit of an Epilobium. We find the ovary 4-celled, not 1-celled as described by Presl.

Z. Californica (Presl! l. c.)—*Hook. & Arn.! bot. Beechey, p.* 140 *& suppl. p.* 340. Z. Californica & Mexicana, *Presl, l. c.*
α. leaves lanceolate-linear, narrow, canescently pubescent.
β. leaves rather broader and, with the branches, villous-canescent; flowers rather smaller; the calyx dull red.
Monterey and St. Francisco, California, *Menzies! Hænke! Douglas! &c.*—This genus is first noticed in Kœnig & Sims' Annals of Botany (*vol.* 1. *p.* 543), but not named or described.

2. EPILOBIUM. *Linn.; Gærtn. fr. t.* 31.

Tube of the calyx not prolonged beyond the ovary; the limb deeply 4-cleft, campanulate or infundibuliform, or 4-parted to the base with the segments spreading, deciduous. Petals 4, spreading or rather erect. Stamens 8, the 4 alternate often a little shorter: anthers elliptical or roundish, fixed near the middle. Stigma clavate (the lobes connivent), or with 4 spreading or revolute lobes. Capsule linear, 4-sided, 4-celled, 4-valved. Seeds numerous, ascending; the chalaza furnished with a coma or tuft of long hairs. —Perennial herbs, with alternate or opposite nearly sessile denticulate or entire leaves, often fascicled. Flowers rose-color, purple, or white, very rarely yellow, nodding before expansion.

§ 1. *Flowers large,* (*purple or violet*)*: limb of the calyx divided nearly to the apex of the ovary, often colored, spreading: petals spreading, entire: stamens and style declined or deflexed: lobes of the stigma linear* (*ovules in* 2 *rows*, Spach) *: leaves scattered.*—CHAMÆNERION, Tourn.

1. *E. angustifolium* (Linn.): stem erect, simple, mostly glabrous; leaves sessile, lanceolate, nearly entire or with slightly undulate margins, the veins pellucid; flowers in a long spicate raceme, bracteate; petals unguiculate, obovate; style at length deflexed.—*Linn.! spec.* 1. *p.* 347; *Engl. bot. t.* 1947; *Michx.! fl.* 1. *p.* 223; *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 205. E. spicatum, *Lam. dict.* 2. *p.* 273, *& ill. gen. t.* 278; *Torr.! fl.* 1. *p.* 391; *DC.! prodr.* 3. *p.* 40.

In waste places and along streams, especially where forests have been recently cut down. Pennsylvania! and New England States! to Newfoundland! Arctic America to lat. 69°, N. W. Coast and Islands! and Oregon! July.—♃ Stem often 4–6 feet high. Flowers large, in a virgate raceme, purplish-lilac-color (sometimes white, *Pursh*). Style about the length of the stamens, hairy at the base, or glabrous. Capsules canescent. *Willow-herb.*

2. *E. latifolium* (Linn.): stem ascending, often branched; leaves ovate or ovate-lanceolate, sessile, nearly entire, somewhat pubescent, rather thick and rigid, the veins not apparent; flowers axillary and terminal, on short pedicels; style somewhat erect, glabrous, shorter than the stamens. —*Linn.! spec.* 1. *p.* 347; *Fl. Dan. t.* 365; *Pursh, fl.* 1. *p.* 259; *Lehm.! in Hook. l. c.*

β. leaves narrowly lanceolate, entire; stem and flowers smaller. *Pursh, l. c.*

Throughout Arctic America from Greenland! and Labrador! to Sitcha! and Kotzebue's Sound! and on the Rocky Mountains to lat. 52°, *Douglas!* —♃ Flowers larger than in E. angustifolium, purple. Capsules canescent.

3. *E. opacum* (Lehm.): stem erect, pubescent; leaves nearly sessile, narrowly lanceolate, mostly entire; the veins opaque; flowers (few) axillary, solitary, peduncled; style reflexed, glabrous, shorter than the stamens.— *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 205.

Banks of the Oregon, *Douglas! Dr. Scouler!*—The flowers and capsules, according to Lehmann, resemble those of E. latifolium, but the leaves are more like E. angustifolium.

§ 2. *Flowers large, yellow: limb of the calyx divided to the apex of the ovary, erect-spreading: petals somewhat spreading, obcordate: stamens erect, included: style filiform, exserted, slightly declined: stigma thick; the lobes oval, dilated: coma of the seeds short, ferruginous: lower leaves opposite, the upper alternate.*—CHRYSONERION.

4. *E. luteum* (Pursh): stem erect, marked with 2–4 decurrent pubescent lines; leaves ovate-lanceolate, sessile, membranaceous, glabrous, denticulate

with rigid teeth; the lowermost opposite; flowers axillary, at length pedicellate; lobes of the calyx lanceolate, acute, rather shorter than the obcordate petals; style filiform; stigma with 4 spreading lobes; capsules linear. —*Pursh! fl.* 1. *p.* 259; *DC.! prodr.* 3. *p.* 44; *Cham. & Schlecht.! in Linnæa*, 2. *p.* 553; *Bongard! veg. Sitcha, l. c. p.* 135.

N. W. Coast, *Pallas!* Sitcha, *Bongard!* Unalaschka, *Chamisso!* Oregon, *Mr. Tolmie!* — ♃ Stem 1–2 feet high. Leaves 2–3 inches long. Flowers as large as in E. latifolium. Anthers oblong. Capsule a little pubescent.

§ 3. *Flowers small (white): limb of the calyx campanulate at the base: petals slightly spreading, obcordate: stamens erect, included: style filiform, much exserted, erect: stigma thick, with* 4 *spreading oblong lobes: capsule short, clavate-oblong: coma very long: leaves opposite.*—CORDYLOPHORUM, Nutt. mss.

5. *E. suffruticosum* (Nutt.! mss.): "stems numerous, decumbent, much branched; leaves opposite, linear-lanceolate, entire, rather obtuse, somewhat canescent; flowers axillary; calyx deeply cleft; the segments rather shorter than the (white) petals; capsules clavate, narrowed at each end, on very short pedicels.

"Gravelly banks of streams, east of Wallawallah.—A very remarkable species, spreading out in tufts on the ground; the young leaves hoary, nearly an inch long, and about 3 lines wide. Flowers near the ends of the branches. Style much exserted, erect [a little declined in the dried specimens]. Capsule canescent, less than an inch in length, thickened in the middle." *Nuttall.* —The flowers of this curious species are scarcely larger than those of E. palustre; the base of the calyx campanulate; the ovary ovoid-clavate, and about the length of the style; but the mature fruit resembles that of a Godetia, is attenuate towards the apex, slightly incurved, rather obtuse at the base, and borne on a short filiform pedicel.

§ 4. *Flowers mostly small (reddish or white): limb of the calyx campanulate or infundibuliform: petals and stamens erect: style erect, included: stigma clavate (the lobes connate or at length rarely expanding): ovules in a single row: lower leaves commonly opposite, the upper often alternate.* —EPILOBIUM proper. (Lysimachion, *Tausch.*)

6. *E. alpinum* (Linn.): stem creeping at the base, usually with 2 pubescent lines; leaves opposite, ovate or ovate-oblong, sessile, or slightly petioled, obscurely denticulate or nearly entire, glabrous; stigma undivided; capsules mostly pedicelled.—*Linn.! spec.* 1. *p.* 348; *Willd.! spec.* 2. *p.* 318.

α. small; leaves mostly sessile, nearly entire; flowers at first sessile.—E. 2/ alpinum, *Fl. Dan. t.* 322; *Engl. bot. t.* 2001; *Pursh, fl.* 1. *p.* 360; *DC.! prodr.* 3. *p.* 41; *Lehm.! in Hook.! fl. Bor.-Am.* 1. *p.* 205.

β. stem larger, nodding at the summit; leaves oblong, denticulate. *Lehm.! l. c.* E. alpinum var. nutans, *Hornem. in fl. Dan. t.* 1387, ex *Lehm.* E. Hornemanni, *Reichenb. ic. pl. rar. t.* 180; *DC. l. c.*, ex *Lehm.*

γ. stem taller (6–12 inches); leaves slightly petioled, denticulate, somewhat ovate, the uppermost acuminate; flowers larger.—E. alpinum *β.* majus, *Wahl. fl. Suec.* 1. *p.* 234. E. alpinum, *Bigel.! fl. Bost. ed.* 2. *p.* 147.

E. origanifolium, *Lam. dict.* 2. *p.* 376; *DC. l. c.*; *Lehm.! l. c.* E. alsinifolium, *Vill.*; *Engl. Bot. t.* 2000.

Arctic America from Greenland! to the N. W. Coast! and on the Rocky Mountains to the sources of the Platte! β. & γ. Canada, *Mrs. Percival!* White Mountains of New Hampshire, *Mr. Oakes!* Mountains of Essex County, New York!—♃ Flowers small, pale rose-color. Fruit almost always pedicellate.—We have seen no specimens corresponding with the larger European forms of E. origanifolium, but the American specimens appear intermediate between this and E. alpinum.

7. *E. affine* (Bongard): stem erect, slightly branched; leaves opposite, sessile, ovate-lanceolate, irregularly serrulate-toothed, slightly pubescent; flowers small, sessile; petals obcordate, 2-cleft, scarcely longer than the calyx; stigma clavate, undivided. *Bongard, veg. Sitcha, l. c. p.* 135.

β.? *fastigiatum* (Nutt.! mss.): "smaller, glabrous; stems several from the same root, simple; leaves partly clasping, irregularly and minutely denticulate."

Sitcha, *Bongard.* β. Plains of the Oregon, *Nuttall!*—The plant of Bongard is said to be 1½–2 feet high: that of Nuttall about half the size.

8. *E. roseum* (Schreb.): stems cæspitose, erect; leaves on short somewhat clasping petioles, oblong, acute at each end, closely denticulate-serrate, puberulent along the margin and veins, the lower ones opposite; flowers subsessile, the fruit pedicelled; petals much longer than the calyx; stigma undivided.—*Schreb. fl. Lips. p.* 147; *Reichenb. ic. rar.* 2. *t.* 190; *DC. l. c.*; *Bongard, veg. Sitcha, l. c. p.* 135.

Sitcha, *Bongard.*—♃ Stem branching, many-flowered, with 2–4 decurrent pubescent lines, a foot or more high. Petals 2-cleft.

9. *E. tetragonum* (Linn.): stem erect, branching, 4-sided, nearly glabrous; leaves opposite, oblong-lanceolate, glandularly denticulate-serrulate; the middle ones more or less decurrent along the angles of the stem, the lower slightly petioled; petals emarginate; stigma clavate; capsules pedicelled, minutely pubescent.—*Engl. bot. t.* 1948; *Fl. Dan. t.* 1029; *DC. l. c.*; *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 206.

β. *glandulosum:* stem simple or nearly so, a little creeping at the base, the angles slightly pubescent.—E. glandulosum, *Lehm.! l. c.*

Canada! to lat. 64°, and Oregon! and N. W. Coast! On the high mountains of Carolina, *Michaux.*—♃ Stem 1–2 feet high, nearly terete above. Flowers small, rose-color.—Hooker remarks that he cannot distinguish unbranched specimens of E. tetragonum from E. glandulosum, *Lehm.*, and Nuttall has observed that the mature capsules of the latter are not sessile, but have slender pedicels. He thinks, however, that E. glandulosum is annual, and inclines to think it distinct.

10. *E. coloratum* (Muhl.): stem nearly terete, erect, much branched, puberulent; leaves mostly opposite, lanceolate, acute, on very short petioles, denticulate-serrulate, the veins often reddish; petals 2-cleft at the apex; stigma clavate; capsules on short pedicels, slightly pubescent.—*Muhl.! in Willd. enum.* 1. *p.* 411; *Nutt. gen.* 1. *p.* 250; *Torr.! fl.* 1. *p.* 392; *Lehm.! in Hook. l. c.*; *Darlingt. fl. Cest. p.* 239. E. tetragonum, *Pursh, fl.* 1. *p.* 259; *Ell. l. c.*

Swampy thickets and ditches, from the Saskatchawan! and Northern States! to the mountains of Georgia, and west to Missouri and Oregon! July–Aug.—♃ Stem 1–3 feet high, at length greatly branched. Flowers small, purplish. Stamens unequal. Style almost exserted.—The whitish dots, both linear and roundish, on the cuticle of the leaves are very distinct in this species, but they also exist in many others, as well as in Œnothera and Ludwigia. This species is very nearly allied to E. tetragonum.

11. *E. molle* (Torr.): clothed with a very soft and dense velvety pubescence; stem terete, strict, at length much branched above; leaves alternate and opposite, crowded, sessile, lanceolate or oblong-linear, rather obtuse, mostly entire; petals deeply emarginate, twice the length of the calyx; stigma large, turbinate-clavate; capsules elongated, on very short pedicels.—*Torr.! fl.* 1. *p.* 398, not of *Lam.* E. strictum, *Muhl. cat.; Spreng. syst.* 2. *p.* 233; *Beck, bot. p.* 117.

In sphagnous swamps, Western part of New York! to New Jersey! and Pennsylvania. Sept.—① Stem at first nearly simple. Flowers larger than in E. coloratum, pale purple or rose-color. Capsules about 3 inches long.—A very distinct species.

12. *E. palustre* (Linn.): stem terete, (at length) branched, clothed with a minute crisped pubescence; leaves lanceolate, rather acute, attenuate at the base, nearly sessile, entire or obsoletely denticulate, the lower ones opposite; petals rose-color, about twice the length of the calyx; stigma clavate; capsules pubescent, on short pedicels.—*Linn. spec.* 1. *p.* 348; *Engl. bot. t.* 346; *Lehm. in Hook. fl. Bor.-Am.* 1. *p.* 207.

β. albiflorum (Lehm.! l. c.): stem slender, at first simple, minutely pubescent; leaves linear, slightly denticulate; capsules canescent.—E. palustre var. albescens, *Wahl. fl. Suec.* 1. *p.* 234; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 12. E. oliganthum, *Michx.! fl.* 1. *p.* 223. E. rosmarinifolium, *Pursh! fl.* 1. *p.* 259. E. lineare, *Muhl. cat. p.* 39. E. squamatum, *Nutt.! gen.* 1. *p.* 250; *DC.! l. c.* E. Dahuricum, *Fischer; DC. l. c.* ex *Lehm.* E. tenellum, densum, & leptophyllum? *Raf. in Desv. jour. bot.; DC. l. c.*

In swamps, Labrador and Northern States! *β.* In sphagnous swamps, Northern parts of New York! Pennsylvania! and New England States! to Arctic America! and Oregon! Aug.—♃? Stem 1–2 feet high, at length much branched.—Dr. Richardson and Prof. Lehmann we think correctly refer this plant to E. palustre. As commonly met with in Pennsylvania and New Jersey, it differs from the European E. palustre only in its somewhat narrower leaves; the flowers being frequently rose-color. In deep sphagnous swamps and more northern regions, it is a smaller plant, often unbranched, with white or very pale rose-colored flowers. According to Lehmann, a similar variety is found in Northern Germany. The base of the stem often bears small scale-like bulbs, as observed by Nuttall.

13. *E. minutum* (Lindl.): stem erect or ascending, branching, puberulent; leaves mostly alternate, elliptical-lanceolate, rather obtuse, nearly entire, slightly pubescent; flowers minute, nodding before expansion; stigma clavate, at length expanded and fimbriate; petals (pale rose-color) obcordate; capsules short, somewhat pedicelled, slightly arcuate, at length erect. *Lindl.! in Hook. fl. Bor.-Am.* 1. *p.* 207. Crossostigma Lindleyi, *Spach, Onagr. p.* 84.

β? foliosum: leaves linear-spatulate, nearly glabrous, with smaller ones fascicled in the axils; petals nearly white.—E. foliosum, *Nutt.! mss.*

On moist rocks, Oregon, *Menzies, Dr. Scouler! Douglas! Nuttall! β.* Dry rocks, Oregon and the Rocky Mountains of California, *Nuttall!*—① Stem 8–12 inches high, often branched from the base. Leaves small, rather thick, with pellucid dots. Petals a little longer than the calyx. Capsules about an inch long.

14. *E. paniculatum* (Nutt.! mss.): glabrous, or glandular-pubescent above; stem erect, slender, terete, dichotomous above; leaves narrowly linear, obscurely serrulate, acute, attenuate at the base, mostly alternate and fascicled; the uppermost subulate; flowers few, terminating the spreading filiform and

almost leafless branches; pedicels pubescent; tube of the calyx infundibuliform; petals obcordate, nearly twice the length of the calyx-lobes; capsules short, acute at each end, straight or a little curved, erect or spreading.

Oregon, near Fort Vancouver and Straits of Da Fuca, *Dr. Scouler! Mr. Tolmie!* Plains of the Oregon and Rocky Mountains, common, *Nuttall!*—① Stem 1–3 feet high, very much branched; the branches naked and very slender. Flowers nearly as large as in E. palustre, pale red. Stigma at length 4-lobed. Capsules about an inch long.—A very remarkable species, which we first received from Dr. Scouler several years since; but it is omitted in Hooker's Flora. Some of our specimens from Mr. Tolmie, kindly communicated by the generous Hooker, are glabrous throughout; while others have a fine glandular pubescence.

E. rosmarinifolium (Hænke) is not a North American plant.

E. pubescens (Roth), which Koch refers to E. parviflorum, *Schreb.*, is given by Presl in the Reliquæ Hænkeanæ as a native of Nootka. His plant is perhaps our E. palustre β. albiflorum.

E. divaricatum (Raf.) (Stem with spreading branches, glabrous; leaves opposite, petioled; petals lanceolate, acute, glabrous, unequally denticulate. *Raf. in Desv. jour. bot.; DC. l. c.*) is too imperfectly characterized for identification; and if the description be correct as far as it goes, the plant probably belongs to some other genus.

Subtribe 2. ŒNOTHEREÆ.—Calyx deciduous from the summit of the ovary after flowering. Seeds naked.—Leaves alternate. The stamens opposite the petals sometimes imperfect.

3. ŒNOTHERA. *Linn.; Juss. gen. p.* 319.

Tube of the calyx prolonged beyond the ovary, deciduous; the segments 4, reflexed. Petals 4, equal, mostly obcordate or obovate, scarcely unguiculate. Stamens 8, nearly equal, or unequal. Ovary 4-celled, with numerous horizontal or ascending ovules in each cell: stigma 4-lobed or capitate. Capsule various in form and texture, 4-valved, many-seeded; the dissepiments sometimes evanescent: placenta either persistent in the axis, or cohering with the dissepiments. Seeds naked, rarely margined at the chalaza or with a cristate appendage.—Herbs or sometimes suffrutescent plants (chiefly American), with alternate leaves, and axillary or terminal (often nocturnal or vespertine) flowers.

In the arrangement of this large genus, we have derived much assistance from Mr. Spach's minute *Monographia Onagrearum* (published in the fourth volume of the *Nouvelles Annales du Museum*, a synopsis of which appeared in the *Annales des Sciences Naturelles* for 1835), although we do not adopt any of that author's genera, except as sections. The seeds of Œ. (Megapterium) Missouriensis, which appears not to have ripened its fruit in Europe, have a curious membranous crest, which, with the broadly winged capsules, give this species perhaps a better claim to the rank of a genus than Godetia with its minutely bordered chalaza; but there is no other peculiarity, and an approach to this appendage is seen in Œ. (Lavauxia) triloba. The genus Sphærostigma is adopted by excellent botanists; but if the species with a globose stigma are to be separated, they should form at least half a dozen genera, and besides, we have a gradual transition to the ordinary stigma of Œnothera.

§ 1. *Stigma cruciately 4-parted, the lobes mostly elongated: tube of the calyx much produced, linear, cylindrical, or somewhat 4-angled, slightly dilated at the summit: petals mostly obovate or obcordate (never lilac or purple): stamens scarcely unequal, often a little declined: anthers linear or linear-oblong, fixed near the middle, versatile: capsules thick and coriaceous or somewhat ligneous.*—EUŒNOTHERA.

* *Annual or biennial caulescent herbs: flowers (mostly large) erect before expansion, nocturnal, fugacious, yellow, usually turning to rose-color or violet in fading: capsule coriaceous, sessile, more or less cylindrical or oblong-conic, 4-ribbed, somewhat 4-sided: seeds very numerous, and arranged in two rows in each cell, nearly horizontal or ascending.*—Onagra, *Tourn.* (Œnothera & Onagra, *Spach.*)

1. *Œ. biennis* (Linn.): stem erect, mostly simple, usually hirsute; leaves ovate-lanceolate, repandly denticulate, acute, more or less pubescent; flowers in a terminal somewhat leafy spike; tube of the calyx much longer than the ovary, and from one-half to 2–3 times longer than the segments; stamens slightly declined; capsules oblong, slightly tapering above, obscurely 4-sided or almost terete; the valves 1-ribbed.—Onagra vulgaris & chrysantha, *Spach, l. c.*

α. vulgaris: petals a little longer than the stamens, slightly obcordate.—Œ. biennis, *Linn.! spec.* 1. *p.* 346; *Michx.! fl.* 1. *p.* 224; *Engl. bot. t.* 1534; *DC.! prodr.* 3. *p.* 46; *Hook.! fl. Bor.-Am.* 1. *p.* 209. Œ. gauroides, *Hornem. hort. Hafn.*

β. muricata: petals a little longer than the stamens; stem and ovaries strigose-hirsute.—Œ. muricata, *Murr. in comm. Goett.* 6. *t.* 1; *Pursh, l. c.*; *Fl. Dan. t.* 1752; *DC. l. c.*

γ. grandiflora: petals large, much longer than the stamens, rather deeply obcordate.—Œ. grandiflora, *Ait. Kew.* (*ed.* 1.) 2. *p.* 2; *Bot. mag. t.* 2048. Œ. suaveolens, *Desf. cat.* Œ. Lamarkiana, *Seringe, in DC. l. c.*

δ. parviflora: petals small, about the length of the stamens; tube of the calyx 2–3 times the length of the segments; ovaries slightly hirsute.—Œ. parviflora, *Linn.! spec.* (*ed.* 2.) 1. *p.* 492.

ε. cruciata: petals (abortive) linear-oblong, shorter than the stamens; tube of the calyx 2–3 times the length of the segments; capsules nearly glabrous.—Œ. cruciata, *Nutt.! in DC. l. c.* (under Œ. parviflora.)

ζ. canescens: petals longer than the stamens: stem and leaves canescently hairy; capsules canescent.

Throughout N. America from lat. 56° to Florida! Arkansas! and Oregon! and naturalized in Europe. June–Aug.—Stem 1–5 feet high. Flowers mostly pale yellow.—Many other varieties of this common and variable species might be given: certainly none of them deserve the rank of species.—*Evening Primrose.*

2. *Œ. bifrons* (Don): pubescent; stem erect, often branching above; leaves oblong or ovate, the upper ones short, closely sessile and somewhat cordate, denticulate; spikes elongated; bracts ovate-cordate; tube of the calyx very slender, much longer than the segments and many times longer than the slightly hairy ovary; petals (rather large) entire, about the length of the stamens; capsules prismatic-cylindrical, nearly glabrous.—*Don, in Brit. fl. gard.* (*ser.* 2) *t.* 386; *Hook.! bot. mag. t.* 3764. Œ. heterophylla, *Spach, Onagr. p.* 28?

Texas, *Drummond!*—This species is allied to Œ. biennis, but appears to be distinct. The young fruit is more slender, sometimes incurved, and of the same diameter throughout. It is probably the Œ. heterophylla of Spach; but we do not observe the deeply sinuate-toothed lower leaves, nor the hirsute-tomentose ovaries.

3. *Œ. Drummondii* (Hook.): clothed with a soft pubescence; stem decumbent; leaves ovate-elliptical or oblong, rather obtuse; the lower ones tapering into a petiole, somewhat sinuately toothed, the upper ones obscurely denticulate; flowers (very large) axillary; tube of the calyx equalling in length the segments and the hirsute ovary; petals much longer than the slightly declined stamens, a little exceeding the calyx-segments; capsules (immature) cylindrical, elongated, hirsute-pubescent, slightly pedicelled.—*Hook.! bot. mag. t.* 3361; *Spach, Onagr. p.* 28.

Texas, *Drummond!*—Stem about 2 feet long, thick. Floral leaves as long as the tube of the calyx. Corolla about 3 inches in breadth. Ovary an inch long: style about the length of the petals.

4. *Œ. Jamesii:* canescently strigose; stem decumbent; leaves oblong-lanceolate, repandly denticulate, acute; flowers (very large) paniculate at the summit of the stem; tube of the calyx (very long) more than twice the length of the segments and many times longer than the ovary; petals scarcely longer than the slightly declined stamens; anthers very long, fixed below the middle; style exserted; ovary cylindrical.

On the Platte or Canadian River, *Dr. James!*—Leaves (upper ones) 3–5 inches long, clothed equally on both sides with a short appressed rough pubescence. Bracts rather shorter than the ovary. Calyx canescent: the tube rather stout, 3–4 inches long, a little curved, slightly dilated at the summit. Petals apparently yellow, turning to rose-color. Anthers three-fourths of an inch in length. Stigmas linear, rather thick. Ovary less than an inch in length, canescent. Fruit unknown.—We have only an imperfect specimen of this apparently very distinct species.

5. *Œ. Hookeri:* canescently pubescent and somewhat villous; stem erect, angled; leaves lanceolate, sessile, rather acute, obscurely denticulate, not undulate; flowers (large) sessile, in a leafy spike; calyx villous; the tube twice the length of the ovary, rather shorter than the slightly acuminate segments; petals obcordate, about the length of the style; stigmas linear, somewhat thickened; capsules short.—Œ. odorata? *Hook. & Arn.! bot. Beechey, suppl. p.* 343, scarcely of *Jacq.*

California, *Douglas!*—Stem stout and tall, strict, strongly angled: pubescence soft and minute, with long and coarser hairs intermixed. Petals apparently yellow, turning to rose-color. Ripe fruit unknown.—This plant differs from Œ. odorata (which is said to be a native of Patagonia) in its plane leaves, which are not attenuated to a sharp point, its perfectly sessile ovaries, &c., and is besides more hairy. In the collection of Dr. James, made near the sources of the Platte or Canadian, we have a fragment apparently of the same species.

6. *Œ. rhombipetala* (Nutt.! mss.): minutely pubescent; stem tall, erect; leaves linear-lanceolate, obscurely denticulate, acute; the lower ones elongated, tapering into a short petiole; the radical ones somewhat pinnatifid or sinuate; spike strict, elongated; bracts foliaceous, much shorter than the (rather large) flowers; tube of the calyx very slender, rather longer than the segments and several times longer than the ovary; petals rhombic-obovate, acute or acuminate, shorter than the style and about the length of the stamens; anthers inserted near the base; capsules very small, cylindrical.

Plains of Red River, Arkansas, *Nuttall! Dr. Engelmann.* Woods near

Fort Gibson, *Dr. Leavenworth!* June.—A remarkable species, with somewhat the habit of Œ. biennis. Flowers very numerous. Petals narrowed at the base. Filaments and style almost capillary. Anthers linear.

7. *Œ. sinuata* (Linn.): pubescent or villous; stems ascending or decumbent, simple or branching from the base; leaves oblong or lanceolate, sinuate-toothed or often pinnatifid, the lower ones petioled; flowers (small) axillary; calyx villous; the tube longer than the very hairy ovary, and twice or thrice the length of the segments; petals about the length of the stamens and style (pale yellow, turning to rose-color); capsules cylindrical or slightly prismatic, elongated, straight or often arcuate.—*Linn.! mant. p.* 228; *Murr. in comm. Goett.* 5. *t.* 9; *Willd.! spec.* 2. *p.* 309; *Michx.! fl.* 1. *p.* 224; *Ell. sk.* 1. *p.* 443; *DC. prodr.* 3. *p.* 48; *Spach! l. c.* Lysimachia corniculata maritima, &c., *Pluk. alm. t.* 203, *f.* 3.

β. minima (Nutt.): stem small, 1-flowered; leaves denticulate or nearly entire.—*Hook.! bot. mag. t.* 3392. Œ. minima, *Pursh, fl.* 1. *p.* 262, *t.* 15.

γ. hirsuta: canescently hirsute throughout; stem stout, erect or ascending.—Œ. Mexicana, *Spach! Onagr. p.* 17.

δ. humifusa: canescent, procumbent; leaves smaller, sinuate-toothed or almost entire.—Œ. humifusa, *Nutt.! gen.* 1. *p.* 245, not of *Lindl. bot. reg.!*

In fields and grassy places, New Jersey! to Florida! Louisiana! and Texas. *β.* In sandy fields, New Jersey! and Southern States! *γ.* Texas, *Drummond! δ.* On the sea-shore, Florida, *Dr. Baldwin! Mr. Cozzens! Dr. Leavenworth!* May–June.—Flowers about the size of those of Œ. pumila. Calyx-segments often toothed near the tip. Capsules 1–1½ inch in length, obtuse or truncate. Seeds minutely favose.—The var. *β.* is a vernal form of the species, growing in barren soil; *γ.* is a more hairy state, of which we have numerous intermediate forms; and *δ.* is a maritime variety.

* * *Annual or perennial caulescent herbs: flowers (rather large) nodding before expansion, diurnal, white or flesh-color, turning to rose-color, odorous: tube of the calyx linear, slender: capsule rather coriaceous, linear, prismatic-cylindrical, sessile: seeds terete, ascending, arranged in a single row in each cell.*—Anogra, *Spach.*

8. *Œ. pinnatifida* (Nutt.): annual, decumbent, pubescent or puberulent; leaves deeply pinnatifid, with linear or lanceolate acute segments; the radical ones often nearly entire; flowers axillary, very large; segments of the calyx rather shorter than the tube, and much shorter than the broadly obcordate petals; style filiform, shorter than the petals but exceeding the stamens; stigmas filiform, divaricate, as long as the anthers; capsules prismatic-cylindrical, striate-grooved, somewhat tapering towards the apex.—*Nutt.! gen.* 1. *p.* 247, not of *H. B. & K.* Œ. albicaulis, *Pursh, fl.* 2. *p.* 274, not of *Nutt.* Œ. Purshii, *Don, syst. gard. & bot.* 2. *p.* 688.

α. minutely puberulent, and slightly canescent when young.

β. minutely puberulent and hirsutely pubescent; flowers a little smaller.

Plains of the Platte and Missouri, *Bradbury! Nuttall! Dr. James!* May–June.—Stem low, or sometimes 1–2 feet long. Corolla 2–3 inches in diameter. Anthers long and slender. Capsules about an inch long. "Seeds ovoid, grooved and punctate." *Nutt.*—Mr. Nuttall now supposes that he formerly confounded two species under this name, and proposes the name of Œ. Bradburiana for our var. *α.* from which the original description seems to have been chiefly taken; but we are confident that they are forms of the same species.

9. *Œ. trichocalyx* (Nutt.! mss.): "perennial or biennial, somewhat canescently puberulent; stem nearly simple, erect; leaves all pinnatifid; the

segments short, entire, obtuse; flowers axillary (rather small); calyx when young villous with very long flat hairs; the segments shorter than the tube and the roundish petals; stamens and style shorter than the petals; stigmas short; capsules cylindrical.

"Plains of the Platte in the Rocky Mountains. June.—Stem about a foot high. Leaves crowded, the younger ones somewhat canescent [and sprinkled with hirsute flattish hairs]; the terminal lobe of the lower leaves oblong and entire. Flowers white, turning to rose-color. Seeds not punctate." *Nuttall.*

10. *Œ. coronopifolia:* perennial? minutely pubescent and strigose; stem ascending or erect; leaves pectinate-pinnatifid, with linear acute segments; the lowermost somewhat entire; flowers (small) axillary; tube of the calyx filiform, abruptly dilated at the summit, villous in the throat; the segments linear-lanceolate, shorter than the tube, longer than the entire roundish petals; stamens shorter than the petals; style exserted; stigmas rather short and thick; ovaries hirsute.—Œ. pinnatifida, *Torr.! in ann. lyc. New York*, 2. *p*. 201, not of *Nutt.*

Forks of the Platte, *Dr. James!*—Leaves crowded. Corolla about an inch broad when expanded. Fruit unknown.

11. *Œ. pallida* (Dougl.): perennial, glabrous; root creeping; stems ascending, very smooth, whitish, branched above; leaves lanceolate or linear, acute, entire or remotely serrulate or denticulate; the radical ones sometimes runcinately toothed or pinnatifid towards the base; flowers (rather small) axillary and terminating the branches; calyx glabrous or with scattered hairs; the tube much longer than the ovary, and about twice the length of the segments; petals retuse or erose-crenulate, scarcely longer than the stamens and style; capsules cylindrical (white), somewhat contorted.—*Dougl. in bot. reg. t.* 1142; *Hook. fl. Bor.-Am.* 1. *p*. 210.

β. leptophylla: leaves narrowly linear.—Œ. leptophylla, *Nutt.! mss.*

Common in dry sandy soil west of the Rocky mountains, *Douglas! Mr. Tolmie! β*. Plains near the sources of the Platte, *Nuttall!*—Stem 6 inches to 2 feet high, rather woody at the base, with numerous spreading branches.

12. *Œ. albicaulis* (Nutt.): perennial; stem erect, branched above, very smooth and shining, white; leaves linear or somewhat lanceolate, mostly entire, acute, minutely pubescent beneath; flowers axillary (rather small); tube of the calyx longer than the ovary, and rather longer than the segments; petals "roundish, entire, shorter than the calyx segments and about the length of the stamens;" style exserted; capsules prismatic-cylindrical, straight, truncate, nearly glabrous.—*Nutt. in Fraser, cat., & gen.* 1. *p*. 245; *Torr.! in ann. lyc. New York*, 2. *p*. 201; *Hook. fl. Bor.-Am.* 1. *p*. 210; not of *Pursh*. Anogra Nuttalliana, *Spach, l. c.*

Barrens along the Platte, *Nuttall, Dr. James!* Saskatchawan, *Drummond*.—Calyx puberulent.

* * * *Annual, biennial, or mostly perennial caulescent herbs: flowers mostly diurnal: tube of the calyx linear-clavate: capsule obovate or clavate, often pedicellate, with 4 carinate or winged angles and 4 intermediate ribs, tardily dehiscent, cartilaginous, the dissepiments often evanescent: seeds very numerous, irregular or in several rows, horizontal; testa membranaceous: leaves marked with minute linear and roundish pellucid dots.*—Œnotherium, *Seringe*, (excl. spec.)

† **Flowers (large and showy) nodding before expansion, fragrant, white turning to rose-color in fading: capsule almost ligneous.** (Xylopleurum, *Spach.*)

13. *Œ. speciosa* (Nutt.): perennial, puberulent; stems erect or ascending, flexuous, often branching; leaves lanceolate or oblong-lanceolate, attenuate at the base; the radical and lower cauline ones pinnatifid, or pinnately toothed towards the base, petioled; the uppermost denticulate or remotely toothed; flowers (large) in a loose at length elongated spike; tube of the calyx longer than the ovary, but shorter than the conspicuously acuminate segments; capsules slightly pedicelled, thick and almost ligneous, clavate-obovate, rather acute, strongly 8-ribbed, the alternate ribs cristate.—*Nutt.! in jour. acad. Philad.* 2. *p.* 119; *Hook. exot. fl. t.* 80; *DC.! prodr.* 3. *p.* 50. Xylopleurum Nuttallii, Drummondii, and obtusifolium, *Spach! Onagr. p.* 51.

α. puberulent or canescently pubescent; bracts shorter than the slightly pedicelled capsules.—Œ. speciosa, *Nutt.! l. c.; Don, in Brit. fl. gard. ser.* 2. *t.* 253; *Hook. bot. mag. t.* 3189! *Spach! l. c.*

β. bracts foliaceous, the lowermost as long as the tube of the calyx; capsules slightly pedicelled.

γ. minutely puberulent; bracts mostly foliaceous, shorter than the tube of the calyx; pedicels in the lower flowers as long as the capsules.

Red River, Arkansas, *Nuttall! Dr. Pitcher!* Texas, *Drummond!*—Stem often a little woody at the base, varying from 6 inches to 2–3 feet high. Petals very large and broad, slightly obcordate, "yellow at the base, with several yellowish-green veins." (*Hook.*) Stamens a little shorter than the petals. Style longer than the stamens: stigmas linear-filiform. Alternate ribs of the capsule almost winged.—The leaves vary considerably in the degree of division, as well as in the pubescence: they exhibit round pellucid dots under the microscope. The size of the bracts and the length of the pedicels are also variable.

† † **Flowers (scarcely odorous) erect before their expansion, diurnal, yellow, unchanged in fading. (Kneiffia, *Spach.*)**

14. *Œ. fruticosa* (Linn.): perennial, hairy or almost glabrous; stem simple or branching above (often purplish), erect; leaves lanceolate or oblong-lanceolate, repandly denticulate; corymb peduncled, naked below, elongated in fruit; tube of the calyx much longer than the ovary; petals (large) broadly obcordate, longer than the acuminate calyx segments and stamens; capsules oblong-clavate, 4-winged, with intermediate ribs, longer than the pedicels.—*Linn.! spec.* 1. *p.* 456; *Nutt. gen.* 1. *p.* 247; *Torr.! fl.* 1. *p.* 389; *DC.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 212, *& bot. mag. fol.* 3548, (excl. *γ.* & *δ.*) Œ. hybrida, *Michx.! fl.* 1. *p.* 225. Kneiffia suffruticosa & floribunda, *Spach! l. c.*

β. ambigua: corymbs peduncled, sometimes leafy; leaves (membranaceous) oblong-lanceolate; tube of the calyx longer than the segments; petals (smaller) longer than broad.—*Nutt.! l. c.; Torr.! l. c.; Hook.! bot. mag. t.* 3548. Œ. ambigua, *Spreng. syst.* 2. *p.* 229; *DC. l. c.* Œ. Canadensis, *Goldie, in Edinb. phil. jour.* fide *Hook.*

γ. phyllopus: corymbs sessile, leafy. *Hook. l. c.* Œ. fruticosa, *Bot. mag. t.* 332., fide *Hook.* Œ. serotina, *Don, in Brit. fl. gard.* (*ser.* 2) *t.* 184; *Lindl.! bot. reg. t.* 1840.

δ. incana: leaves elliptical-lanceolate, canescently hairy; corymbs few-flowered.—*Hook.! l. c.* Œ. incana, *Nutt. l. c.*

ε. hirsuta: clothed with villous-hirsute hairs; peduncles 1–few-flowered: petals longer than broad.—*Nutt.! mss.* Œ. pilosella, *Raf. ann. nat. p.* 15.

In dry sterile soil, Canada? New York! and Ohio! to Florida and Louisiana! June–Aug.—Stem (1–3 feet high, rigid but not shrubby), leaves, &c., varying exceedingly in the degree of pubescence, sometimes almost glabrous.

Leaves sessile or slightly petioled, marked with minute translucent linear dots, as in many other species, sometimes membranaceous, often firm. Flowers large: petals rather pale yellow. Capsules sometimes clustered, very short, mostly glabrous, twice the length of the pedicels, 4-winged quite to the base; the intermediate ribs strong but not projecting.—We fully agree with Hooker as to the limits of this polymorphous species, except that Œ. Fraseri seems to us a different species (although Œ. fruticosa is sometimes cultivated under this name). Œ. linearis, which Hooker inclines to consider a variety, is certainly distinct, although the present species sometimes has almost linear-lanceolate leaves.

15. *Œ. glauca* (Michx.): perennial, very glabrous and a little glaucous; stem erect, branching above; leaves ovate or oblong-ovate, sessile, repand-denticulate, mostly obtuse; flowers (large) in short leafy corymbs; tube of the calyx many times longer than the ovary; petals broadly obovate, emarginate and erosely crenulate at the summit, much longer than the acuminate calyx-segments; capsules ovoid-oblong, 4-winged, tapering at the base into a very short pedicel.—*Michx.! fl.* 1. *p.* 224; *Bot. mag. t.* 1606; *Lindl.! bot. reg. t.* 1511. Kneiffia glauca, *Spach! l. c.*

β. Fraseri: leaves ovate-lanceolate, sometimes slightly petioled.—Œ. Fraseri, *Pursh, fl.* 2. *p.* 734? Œ. fruticosa ε. Fraseri, *Hook.! bot. mag. fol.* 3545. Kneiffia Fraseri, *Spach.! l. c.*

Woods in the valley of the Mississippi, *Michaux!* Kentucky, *Dr. Short!* and in the mountainous portion of Virginia! and Carolina! May–July.—Stem 2–3 feet high. Leaves 1½–3 inches long, mostly obtuse, sometimes attenuate to a narrow apex and rather acute, marked with linear dots. Flowers nearly sessile, very showy.—This is a perfectly glabrous and more or less glaucous plant, with broader leaves and larger flowers than Œ. fruticosa. It is apparently almost confined to the neighborhood of the Alleghany mountains.

16. *Œ. riparia* (Nutt.): biennial, slightly pubescent; leaves linear-lanceolate, elongated, attenuate at the base and somewhat petioled, remotely and obscurely glandular-denticulate or entire; flowers (large) in a somewhat leafy at length elongated raceme; tube of the calyx much longer than the ovary; petals slightly obcordate, longer than the stamens and the acuminate calyx-segments; capsules oblong-clavate, often shorter than the pedicels, slightly 4-winged, with 4 strong intermediate ribs.—*Nutt.! gen.* 1. *p.* 247.

Swamps and river-banks, Quaker-bridge, New Jersey! and from North Carolina! to Florida! June–July.—Stem 2–3 feet high, slender, often virgately branched. Leaves rather thick, mostly obtuse, 2–4 inches long, pubescent along the midrib and margins. Flowers fully as large as in Œ. fruticosa. Pedicels of the lower flowers often an inch in length.

17. *Œ. linearis* (Michx.): perennial? erect; stem slender and often branched; leaves linear or narrowly lanceolate, rather obtuse, remotely denticulate or entire; flowers (rather large) somewhat corymbose at the extremity of the branches; tube of the calyx slender, longer than the ovary, but scarcely exceeding the segments; petals longer than the stamens and calyx-segments; capsules clavate-turbinate or obovate, mostly pubescent or canescent, with the alternate angles slightly winged above, tapering at the base into a slender pedicel.—*Michx.! fl.* 1. *p.* 226; *Pursh, l. c.*; *Nutt.! gen.* 1. *p.* 248; *Ell.! sk.* 1. *p.* 444. Kneiffia angustifolia, *Spach! l. c.* K. maculata, *Spach, l. c.?*

β. stems often decumbent at the base, at length much branched; leaves smaller.

In dry sandy places, Virginia! to Florida! and Louisiana. *β.* Montauk Point, Long Island! and North Carolina towards the mountains! April–

July.—Stems 10–15 inches, or sometimes 2 feet high; the whole plant commonly more or less canescently puberulent, at least when young. Leaves sometimes narrowly linear, sometimes linear-oblong, tapering at the base and slightly petioled. Flowers at least twice the size of those of Œ. pumila; the fruit corymbose at the summit of the stem or branches, not in an elongated spike like that species.

18. *Œ. chrysantha* (Michx.): biennial? pubescent; stem ascending; leaves lanceolate, rather obtuse, attenuate at the base, entire or obscurely denticulate, the radical ones obovate-spatulate; flowers (small) in a rather crowded spike; tube of the calyx as long as the ovary and longer than the segments; petals (orange-yellow) broadly obovate, emarginate, longer than the stamens; capsules (nearly glabrous) clavate-oblong, distinctly pedicelled; the alternate angles very narrowly winged.—*Michx.! fl.* 1. *p.* 225; *DC. l. c.* Œ. riparia, *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 212, not of *Nutt.* Kneiffia chrysantha, *Spach! l. c.*

Canada! from Hudson's Bay, *Michaux!* Michigan! &c. Near Niagara Falls, *Mr. John Carey!* June–July.—Stem a foot or more high, slender, purplish and glabrous towards the summit. Flowers usually rather smaller than in Œ. pumila, more crowded in a terminal somewhat pedunculate spike; the capsules less clavate, &c.—The lower capsules of Œ. pumila are not unfrequently pedicellate; but in this species they are uniformly so, and the lower pedicels are often as long as the capsules themselves. Michaux describes the capsules as sessile; but Mr. Spach remarks that they are pedicellate in the plant of his own herbarium. Œ. pusilla, *Michx.* may also belong to this species, but Michaux's specimens want the flowers.

19. *Œ. pumila* (Linn.): biennial, minutely pubescent; stem ascending; leaves lanceolate, mostly obtuse, entire, acute or attenuate at the base, the radical ones obovate-spatulate; flowers (small) in a loose elongated leafy spike, the apex nodding before expansion; tube of the calyx shorter than the ovary and about the length of the segments; petals (pale yellow) obcordate, scarcely longer than the calyx-segments and stamens; capsules (glabrous) oblong-clavate, almost sessile; the alternate angles narrowly winged.—*Linn.! spec.* (*ed.* 2) 1. *p.* 493; *Bot. mag. t.* 335; *Pursh! fl.* 1. *p.* 262; *Seringe! in DC. prodr.* 3. *p.* 51; *Hook. fl. Bor.-Am.* 1. *p.* 212. Kneiffia pumila, *Spach! Onagr. p.* 48.

β.? pusilla: smaller and more pubescent; capsules a little shorter.—Œ. pusilla, *Michx.! fl.* 1. *p.* 225. (in fruit only.)

Dry fields, Canada (Hudson's Bay!) and Northern States! to the mountains of South Carolina! June–July.—Stem commonly simple, 6–12 inches high, minutely puberulent, as also the calyx, capsules, and sometimes the young leaves; the latter slightly petioled. In fruit the leafy loose spike is often 6–8 inches in length, the flowers sometimes commencing near the base of the stem.

20. *Œ. Spachiana:* annual, minutely pubescent; stem simple or branching from the base; leaves lanceolate or linear, obtuse, entire, attenuate at the base; flowers (rather small) axillary; tube of the calyx shorter than the segments; petals nearly entire, much longer than the calyx-segments and stamens; capsules (canescently pubescent) obovate-clavate, the alternate angles carinate or slightly winged towards the summit, tapering to a slender base, nearly sessile.

Texas, *Drummond!*—In Sir Wm. Hooker's herbarium this plant is labelled "Blemnoderma Drummondii, *Spach*"; but we know not where it is described, and there is no genus of that name in Mr. Spach's *Monagraphia Onagrearum*. It resembles Œ. pumila, and is about the same size, although the flowers (apparently yellow) are larger, and the fruit resembles that of Œ.

linearis, but is sessile, although much attenuate at the base. The lobes of the stigma are connivent, but this perhaps is not a constant character.

21. *Œ. linifolia* (Nutt.): biennial; stem strict, simple or branched above; radical leaves oblong-spatulate, petioled; the cauline ones linear-filiform, crowded and fascicled; spikes slender, loosely-flowered; bracts shorter than the ovary, persistent; flowers very small; tube of the calyx rather shorter than the ovary; the segments shorter than the petals; lobes of the stigma very short; capsules obovate, 4-carinate, nearly sessile, hispidly puberulent.—*Nutt.! in jour. acad. Philad.* 2. *p.* 120; *DC.! prodr.* 3. *p.* 50. Kneiffia linifolia, *Spach! l. c.*

Rocks and dry hills, Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* Western Louisiana, *Dr. Hale!* Texas, *Drummond!* May–July.—Stem about a foot high, glabrous except near the apex. Capsules 2–3 lines long, slightly 4-carinate when mature, with 1–2 scarcely prominent intermediate nerves.—Differs from the other species of the section in its peculiar foliage and slightly lobed stigma.

* * * * *Nearly acaulescent cæspitose perennial herbs, often becoming annual: flowers (rather large) nearly radical, erect before expansion, nocturnal, pale yellow (turning to violet or rose-color?): tube of the calyx filiform, very long, somewhat expanded at the summit: capsules sessile, oval or obovate, cartilaginous, reticulated, with 4 cristate wings, tardily dehiscent, at length both septicidal! and loculicidal: seeds obovate, horizontal, in two rows in each cell; the testa granulose and variegated, crustaceous.*—Lavauxia, *Spach.* (partly?)

22. *Œ. triloba* (Nutt.): densely cæspitose; stems very short; leaves runcinate-pinnatifid, petioled, nearly glabrous; the segments linear-lanceolate, often toothed; the terminal lobe elongated, acute, toothed; tube of the calyx very long, filiform, dilated at the summit; the segments linear-lanceolate, acuminate, rather longer than the 3-nerved and somewhat 3-lobed petals; stamens and style somewhat declined, shorter than the petals; capsules (numerous) sessile, ovoid, 4-winged, apiculate or at length 4-toothed at the apex, reticulated.—*Nutt.! in jour. acad. Philad.* 2. *p.* 118; *Hook. bot. mag. t.* 2566; *Bart. fl. N. Am. t.* 37; *DC.! prodr.* 3. *p.* 49. Œ. rhizocarpa, *Spreng. syst.* 2. *p.* 230; *DC. l. c.* Lavauxia Nuttalliana, *Spach! Onagr. p.* 38, *t.* 31, *f.* 1.

Arid plains, Red River, Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!*—Leaves large, membranaceous. Flowers smaller than in Œ. fruticosa. Tube of the calyx 3–5 inches long, shorter than the radical leaves. Capsules nearly an inch in length, almost ligneous. Seeds slightly ascending, granulose.—The capsules are so numerous and form such large and dense clusters at the surface of the ground, that, according to Nuttall, the growth of the plant is often stifled and it becomes annual: otherwise it is perennial.

* * * * * *Mostly acaulescent cæspitose perennial herbs: flowers (very large) radical, erect before expansion, nocturnal, fragrant, fugacious, flesh-colored or white, turning to rose-color: tube of the calyx very long, rather thick, expanded at the summit: capsule pedicellate or nearly sessile, cartilaginous or coriaceous, oblong-conic or cylindraceous, 4-ribbed, more or less cristate at the sutures, which are sulcate and often tuberculate, loculicidal: seeds nearly horizontal, arranged in two rows in each cell, oval-obovate, with a crustaceous*

even testa, sulcate and with a double crustaceous incurved crest-like appendage along the inner side.—Pachylophis, *Spach.* (Descr. of the seed from Œ. marginata.)

23. *Œ. cæspitosa* (Nutt.): almost stemless, cæspitose; leaves lanceolate, acute, repandly toothed or nearly entire, attenuate into a long margined petiole, nearly glabrous; tube of the calyx 4 times the length of the carinate acuminate segments; petals (very large) deeply obcordate, longer than the declined stamens and style; anthers as long as the filaments; capsules nearly sessile, oblong-conical, somewhat 4-angled; the margin of the valves tuberculate-cristate.—*Nutt.! in Fraser, cat.; Bot. mag. t.* 1593; *Pursh, fl.* 2. *p.* 735; *Nutt.! gen.* 1. *p.* 246. Œ. scapigera, *Pursh, fl.* 1. *p.* 263. Pachylophis Nuttallii, *Spach, Onagr. p.* 36, *t.* 30, *f.* 1.

Dry and denuded argillaceous hills, on the banks of the Missouri and Platte, *Lewis, Nuttall!* June–July.—Root very large and succulent. Corolla often 3 inches in diameter: the petals very broad, white, with yellowish veins, reddish in withering. Seeds cylindric-ovate. (*Nutt.*)

24. *Œ. montana* (Nutt.! mss.): "stemless, somewhat cæspitose; leaves broadly lanceolate, sinuate-toothed, pubescent on the margins, tapering into a short petiole; tube of the calyx about twice the length of the linear-lanceolate acute (scarcely carinate) segments; petals (large) broadly obcordate; capsules sessile, cylindrical, conic, striated, even.

"Plains of the Platte in the Rocky Mountains.—Nearly allied to Œ. cæspitosa; but the petioles and margin of the leaves pubescent, the capsules not muricate, &c. Tube of the calyx about the length of the leaves." *Nuttall.*

25. *Œ. marginata* (Nutt.! mss.): almost stemless, cæspitose, villous-pubescent, especially along the margin of the leaves; leaves lanceolate, on long petioles, pinnatifid-toothed or runcinate; tube of the calyx longer than the segments: petals (large) dilated; capsules pedicellate, oblong-cylindrical, obscurely 4-sided, ribbed, the margin of the valves slightly tuberculate.—*Hook. & Arn. bot. Beechey, suppl. p.* 343.

Rocky Mountains in Upper California, about lat. 42°, *Nuttall!* Near the Blue Mountains and on Snake River, *Mr. Tolmie.*—Leaves sometimes toothed only towards the base, about the length of the calyx-tube. Flowers large and handsome. Capsules an inch long (the pedicel about the same length) coriaceous, hairy. Seeds ovoid, gibbous, appearing grooved along the inner side by the appendage or fold of the testa on each side of the raphe, extending from near the hilum to the chalaza.

* * * * * * *Decumbent caulescent perennial herbs: flowers (very large) erect before expansion, diurnal, yellow, scarcely odorous: tube of the calyx very long, thick, slightly and gradually dilated near the summit: capsule pedicellate, smooth and shining, veinless, coriaceo-membranaceous, tardily dehiscent, somewhat compressed, very broadly 4-winged: seeds ascending, in a single row in each cell, oval-obovate, with a crustaceo-membranaceous testa, appendiculate with a double membranaceous crest along the inner side from near the base to the chalaza.*—Megapterium, *Spach.*

26. *Œ. Missouriensis* (Sims): stems simple, decumbent: leaves coriaceous, lanceolate, acute, tapering into a short petiole, obscurely denticulate, somewhat canescent when young; flowers axillary (very large); segments of the calyx much shorter than the tube, about the length of the roundish-flabelliform mucronulate petals; stamens and style arcuate-declined; cap-

sules pedicelled, very large, somewhat compressed, with 4 broad wings.—*Sims, bot. mag. t.* 1592. Œ. macrocarpa, *Pursh, fl.* 2. *p.* 734; *DC. prodr.* 3. *p.* 47; *Sweet, Brit. fl. gard. t.* 5. Œ. alata, *Nutt.! gen.* 1. *p.* 248. Megapterium Missouriense & Nuttallii, *Spach, Onagr. p.* 31.

Dry hills, throughout Missouri! and on the Canadian River, *Dr. James!* July–Oct.—Stems low. Tube of the calyx 4–7 inches in length; the segments acuminate, often spotted with purple. Corolla 4–6 inches in diameter; the petals very broad, light yellow, with orange veins. Capsule 2 inches in length, and about the same breadth, including the wings; but exclusive of the wings only a quarter of an inch in diameter. Seeds large; the undulate crest conspicuous, especially at the chalaza.

§ 2. *Stigma dilated, disciform, obscurely 4-lobed: tube of the calyx much produced, trumpet-shaped; the segments short, not carinate: petals broadly rhombic-ovate, erose-crenulate: stamens erect, slightly unequal: anthers oblong-linear, fixed near the middle, versatile: capsules short, cylindrical, sessile: seeds in a double series, horizontal: stems suffrutescent: flowers (rather large, nocturnal?) yellow turning to rose-color, erect before expansion.*—SALPINGIA.

27. *Œ. lavandulæfolia:* suffruticose, low, decumbent, somewhat canescent; leaves crowded, linear, entire, obtuse; tube of the calyx tubular-infundibuliform, many times longer than the ovary and the ovate-lanceolate slightly acuminate segments; petals rhombic-ovate, crenulate, longer than the stamens; stigma discoid; capsules sessile, cylindrical, canescent.

Plains of the Platte, *Dr. James! Nuttall!* ("near Scott's Bluffs.")—Root large, woody. Stems simple, about a span in length. Tube of the calyx about 2 inches long. (Seeds in two rows in each cell, horizontal. *Nutt.*)—Very nearly allied to the Mexican Œ. Hartwegi, *Benth.*, which is a more glabrous plant, with narrower leaves, a more slender calyx tube, and subulate-acuminate segments: the stigma however is similar. We have not seen the fruit of either species.

§ 3. *Stigma disciform, crenulate: tube of the calyx infundibuliform, strongly 4-nerved, shorter than the ovary: the segments carinate with the mid-nerve: petals obovate, erose-crenulate: stamens short, erect: the filaments opposite the petals shortest: anthers oblong, fixed by the middle, versatile: capsules cylindrical, linear, sessile, coriaceous, nearly even: seeds ascending, in a double series: the testa thin: stems suffrutescent at the base: flowers (rather small, diurnal?) yellow, erect before expansion.*—CALYLOPHIS, Spach.

28. *Œ. serrulata* (Nutt.): stems suffruticose, slender, ascending; leaves rigid, linear, lanceolate or oblanceolate, attenuate at the base, irregularly and sharply denticulate-serrate: flowers axillary; petals obovate, undulate-crenulate, inserted by a broad base, much longer than the stamens and the carinate calyx-segments; stigma discoid; capsules cylindrical or slightly prismatic, slender, somewhat 4-grooved.—Calylophis Nuttallii! Drummondiana! & Berlandieri? *Spach, Onagr. p.* 17.

α. *Nuttallii:* low, simple or branched; young shoots, leaves, and capsules minutely canescent; leaves oblong-linear, somewhat acute, with short irregular serratures; capsules pubescent.—Œ. serrulata, *Nutt.! gen.* 1. *p.* 246; *Torr.! in ann. lyc. New York,* 2. *p.* 201.

β. *Douglasii:* low, minutely canescent when young; stems mostly simple; leaves lanceolate or spatulate-lanceolate, shorter, serrulate, the lowermost nearly entire; flowers smaller; capsules canescent.—Œ. leucocarpa, *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 210.

γ. *Drummondii:* low, minutely puberulent; stems simple; leaves linear-spatulate or spatulate-oblong, unequally and rather coarsely serrulate, the teeth sometimes obtuse; flowers larger; capsules puberulent.—Calylophis Drummondiana, *Spach! l. c.*

δ. *spinulosa:* taller, often branching, almost glabrous; leaves linear, elongated, acute (sometimes obtuse), spinulose-serrate; flowers rather large; capsules minutely pubescent.—Œ. spinulosa, *Nutt.! ined.* Œ. serrulata, *Nutt.! in jour. acad. Philad.* 2. *p.* 120; *Hook.! exot. fl. t.* 140.

Dry hills and plains, from the Platte River to the mountains, *Nuttall! Dr. James!* On the Red River and the Missouri, *Nuttall!* On the Mississippi above the Falls of St. Anthony, *Dr. Houghton!* β. Saskatchawan &c. *Douglas! Drummond!* γ. Texas, *Drummond!* δ. Arkansas, *Nuttall! Dr. Leavenworth!* June–July.—Stems 6–12 inches high. Petals about half an inch in length, twice as long as the stamens, bright yellow.—Mr. Nuttall considers his Œ. spinulosa to be a very distinct species; but our suite of specimens furnishes numerous intermediate forms between this and Œ. leucocarpa, which are the two extremes.

§ 4. *Stigma with* 4 *short linear or roundish lobes: tube of the calyx obconic or infundibuliform, mostly shorter than the ovary: petals flabelliform, erose at the summit: stamens short, erect: the filaments (flat) opposite the petals much shortest: anthers oblong, fixed near the base, erect, or at length arcuate: capsules cylindrical or oblong-conical, mostly sessile, coriaceous: seeds ascending or horizontal, in a single series, with a crustaceous testa: the chalaza large, bordered with a very minute denticulate membranaceous border: stems annual: flowers diurnal, inodorous, lilac-purple or rose-color, erect before expansion.*—Godetia, Spach.

* *Lobes of the stigma linear (yellow): capsule elongated, attenuate at the base, canescent or puberulent: seeds ascending (flowers large).*

29. Œ. *Lindleyi* (Dougl.): stem diffuse, ascending, branched; leaves linear-lanceolate, mostly entire, acute at each end, nearly glabrous; tube of the calyx obconic, much shorter than the segments; petals (large, lilac-purple with a deep red spot) twice or thrice the length of the stamens and style; capsules elongated, attenuate at each end, puberulent.—*Dougl.! in Hook. bot. mag. t.* 2832; *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 211; *Don, in Brit. fl. gard.* (*ser.* 2) *t.* 19; *Lindl.! bot. reg. t.* 1405. (var.) Œ. macrantha, *Nutt.! mss.* Godetia Lindleyana, *Spach! l. c.*

Oregon and California, *Douglas! Nuttall!*—Flowers large and showy. Capsules 1–2 inches long.—This and the three succeeding species, now in common cultivation, are perhaps too nearly related.

30. Œ. *rubicunda* (Lindl.): stem erect; leaves linear or lanceolate, denticulate or entire, acute or acuminate, nearly glabrous; tube of the calyx obconic, much shorter than the segments; petals (large, purplish-rose-color, not spotted, bright orange-red at the base) twice or thrice the length of the stamens and style; anthers (orange) with empty yellow tips; capsules linear, truncate.—Godetia rubicunda, *Lindl.! bot. reg. t.* 1856.

California, *Douglas!*—Capsules nearly sessile, somewhat 4-sided.

31. *Œ. vinosa* (Lindl.): stem erect; leaves linear-oblong, slightly toothed, glabrous; tube of the calyx about one-third the length of the segments; petals roundish-cuneiform, not spotted (white, tinged with purple); anthers dark red, with empty yellowish tips; seeds dark brown, uniform. *Lindl.! bot. reg. t.* 1880, under Godetia.

California, *Douglas*, (v. sp. cult.)—A more slender plant than Œ. rubicunda, with rather smaller flowers, &c. *Lindl.*

32. *Œ. amœna* (Lehm.): stem erect; leaves oblong or lanceolate-oblong, obtuse, entire, puberulent; tube of the calyx obconic, about half the length of the segments; petals (large, rose-color and white, with a red spot at the base) much longer than the stamens; capsules linear, attenuate at each end. —*Lehm.! ind. sem. Hamb.* 1820, *& pug. pl. & act. nat. cur.* 14, *t.* 45. Œ. roseo-alba, *Bernh. cat. sem. hort. Erfurt.* 1824; *Reichenb. icon. exot. t.* 47. Godetia Lehmanniana, *Spach, l. c.*

California. (v. sp. cult.)—We know not by whom this species was discovered.

* * *Lobes of the stigma oval, short (commonly dark purple): capsule sessile, usually tapering towards the summit: seeds ascending.*

33. *Œ. viminea* (Dougl.): glaucous, nearly glabrous; stems ascending or erect, with slender branches; leaves lanceolate or oblong-lanceolate, almost entire, nearly sessile; tube of the calyx infundibuliform, about the length of the segments; petals (lilac or rose-color) twice the length of the stamens; style exserted beyond the anthers; lobes of the stigma oval; capsules cylindrical, slightly 4-sided, tapering to the apex, canescently puberulent.—*Dougl.! in Hook. bot. mag. t.* 2873; *Lindl.! bot. reg. t.* 1220; *Lehm. in Hook. fl. Bor.-Am.* 1. *p.* 211.

β.? parviflora (Hook. & Arn.): flowers much smaller; tube of the calyx longer than the ovary, the segments as long as the petals. *Hook. & Arn. bot. Beechey, suppl. p.* 342.

California about lat. 43°, *Douglas! β.* St. Francisco? *Douglas.*—Stem 2–3 feet high. Petals 7–8 lines long. Anthers lanceolate. Capsules an inch or more in length, glaucous-pubescent, somewhat 8-grooved.

34. *Œ. Arnottii:* nearly glabrous, slightly glaucous, stem and branches erect, strict, angled above, densely-flowered at the summit; leaves lanceolate, rather acute or acuminate, obscurely denticulate; tube of the calyx broadly infundibuliform, about the length of the nearly glabrous ovary, shorter than the segments; petals (lilac? with a purple spot near the middle) longer than the stamens, and nearly twice the length of the calyx-segments; style exserted beyond the linear-lanceolate anthers; lobes of the stigma oval, very short; capsules cylindrical-conic, somewhat grooved, glabrous.—Œ. viminea, var.? *Hook. & Arn.! bot. Beechey, suppl. p.* 342.

California, *Douglas!*—The habit of this species is quite different from Œ. viminea, and much like Œ. purpurea, as the authors above-cited remark: but it appears abundantly distinct from either. The flowers are about as large as in Œ. Lindleyi, and apparently as showy.

35. *Œ. Romanzovii* (Ledeb.): stem and branches erect, and, with the young leaves and calyx, silky-canescent; leaves lanceolate-oblong, obtuse, entire, narrowed at the base; tube of the calyx obconic, about half the length of the segments; petals (lilac variegated with white) about twice the length of the calyx-segments and stamens; style included in the tube of the calyx; lobes of the stigma oval; capsules cylindrical, somewhat tapering to each end, canescent when young.—*Ledeb. in Hornem. hort. Hafn.* 1. *p.* 133; *DC. prodr.* 3. *p.* 49; *Don, in bot. reg. t.* 562. Godetia Romanzovii, *Spach, l. c.*

N. W. Coast (or California), *Chamisso.* (v. sp. cult.)—There is some confusion respecting this species: it seems, however, well distinguished by the very short style (scarcely longer than the stigma), which is wholly included in the tube of the calyx.

36. *Œ. quadrivulnera* (Dougl.): puberulent; stems simple or branched, ascending, long and slender; leaves linear or lanceolate-linear, mostly entire; tube of the calyx infundibuliform, about half the length of the segments; petals (pale lilac with a purplish-red spot near the base) twice the length of the stamens and pistils; style about the length of the stamens; lobes of the stigma very short; capsules oblong-linear, pointed, somewhat hairy.—*Dougl.! in bot. reg. t.* 1119; *Lehm.! in Hook. l. c. p.* 213. Godetia quadrivulnera, *Spach l. c.*

Banks of rivers and plains, Oregon, *Douglas! Dr. Scouler! Nuttall!*—Stems 12–20 inches in length. Flowers small. Stigma whitish. Capsules 6–10 lines long, straight or a little curved.

37. *Œ. tenella* (Cav.): stem erect, branching; leaves spatulate-linear or oblong-linear, nearly sessile, obtuse, entire; tube of the calyx obconic, about one-third the length of the segments; petals (purple) commonly variegated, twice the length of the stamens; style exserted beyond the anthers; stigmas (dark purple) elliptical; capsules oblong-linear, pointed, straight or curved, somewhat glabrous.—*Cav. ic.* 4. *t.* 396, *f.* 2; *Ruiz & Pav. fl. Peruv.* 3. *t.* 316; *Brit. fl. gard. t.* 167. Godetia Cavanillesii, *Spach, l. c.*

β. tenuifolia? (Lindl.): leaves narrow; capsules canescently puberulent. —*Hook. & Arn. bot. Beechey, suppl. p.* 342.

California, *Douglas.* (*β.*)—Hooker & Arnott notice two forms in Douglas's Californian collection, which they somewhat doubtfully refer to Œ. tenella *β.* tenuifolia, *Lindl.*

* * * *Lobes of the stigma short, purple: capsule short, closely sessile (hairy), tapering from the base to the summit: seeds horizontal.*

38. *Œ. purpurea* (Curtis): stem and branches erect; leaves oblong or oblong-lanceolate, sessile, obtuse or acute, entire, glaucous, often canescently puberulent; tube of the calyx infundibuliform, about the length of the segments, and of the conical-oblong hirsute ovary; petals (purple) much longer than the stamens; anthers yellow; capsules cylindrical-conic, grooved, hirsute.—*Curtis, bot. mag. t.* 352; *Willd.! spec.* 2. *p.* 311; *Seringe! in DC. prodr.* 3. *p.* 49; *Hook. & Arn.! bot. Beechey, suppl. p.* 342. Godetia Willdenowiana, *Spach, l. c.*

California, *Menzies! Douglas! &c.*—This and the two following species are somewhat nearly related.

39. *Œ. lepida* (Lindl.): stem erect; leaves oblong-lanceolate, entire, glabrous or slightly hairy; tube of the calyx obconical, much shorter than the conical ovary and about half the length of the segments; petals (pale purple, with a deep purple cuneate spot at the summit) roundish-cuneiform, thrice the length of the stamens; anthers purplish; capsules ovate-oblong, villous.—*Lindl.! bot. reg. t.* 1849 (under Godetia); *Hook. & Arn.! bot. Beechey, suppl. p.* 342.

California, *Douglas!*—This species is allied to Œ. purpurea and Œ. decumbens: the flowers are rather larger than in the latter.

40. *Œ. decumbens* (Dougl.): stems ascending, diffuse, much branched; leaves glaucous, mostly entire, somewhat pubescent, the lower ones ovate, the upper ovate-lanceolate, slightly petioled; tube of the calyx obconic, about half the length of the segments, much longer than the canescently

tomentose ovary; petals (lilac-color) emarginate, longer than the stamens; lobes of the stigma reflexed; capsules oblong-conical, obtusely 4-angled, villous-canescent.—*Dougl.! in Hook. bot. mag. t.* 2889; *Lindl.! bot. reg. t.* 1221; *Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 211. Godetia decumbens, *Spach, l. c.*

Northern California, *Douglas!* Oregon, *Mr. Tolmie!*—Petals about half an inch in length. Anthers oblong. Style about the length of the longer stamens.

* * * * *Lobes of the stigma obovate, short: capsule distinctly pedicellate: seeds ascending.*

41. *Œ. Bottæ* (Spach): stem and branches virgate, nearly glabrous; leaves lanceolate or linear-lanceolate, much attenuate at the base and apex, acute, deeply denticulate, petioled, nearly glabrous; segments of the calyx much longer than the obconic tube, and rather shorter than the petals; ovary scarcely longer than the stipe. *Spach, Onagr. p.* 73, (under Godetia.)

Southern California, *Botta*, ex *Spach.*—Stem 2 feet long. Petals 12–15 lines long, purple. Style a little exceeding the anthers of the longer stamens. Stamens more than half the length of the petals: anthers all longer than the filaments. *Spach.*

§ 5. *Stigma with* 4 *very short lobes: tube of the calyx infundibuliform, as long as the ovary; the segments rather erect: petals obovate-cuneiform,* 2-*lobed, erect-spreading: stamens erect: the filaments (filiform) opposite the petals much shorter and usually inserted lower down: anthers mostly short, fixed below the middle: capsules oblong or cylindrical, short, sessile, nearly membranaceous, commonly with a large and thick* 4-*angled placenta: seeds few* (4–6 *in each cell*), *in a single series, ascending, not appendiculate; the testa somewhat crustaceous: stems annual: flowers (rather small) diurnal, purple or rose-color, usually* 2–5 *together in the axils of the floral bract-like leaves.*—BOISDUVALIA, Spach.

42. *Œ. densiflora* (Lindl.): somewhat canescently pubescent; leaves lanceolate or linear-lanceolate, acute, denticulate; the floral leaves crowded, ovate or ovate-lanceolate, acuminate, closely sessile, mostly entire; tube of the calyx obconic, a little longer than the ovary, scarcely the length of the triangular-lanceolate segments; alternate stamens much shorter; anthers elliptical; placenta large, acutely 4-angled; the angles reaching to the valves.—*Lindl. bot. reg. t.* 1593. Boisduvalia Douglasii, *Spach! Onagr. p.* 80.

β. leaves longer, linear-lanceolate; flowers sometimes white.—Œ. salicina, *Nutt.! mss.*

Oregon, *Douglas! Mr. Tolmie!* On the Wahlamet and Wallawallah, *Nuttall!*—A variable plant, as well in its native situations as in cultivation. The valves fall away, leaving the dissepiments wholly united with the thick placenta, in depressions of which the ovules are partly imbedded.

43. *Œ. glabella* (Nutt.! mss.): "glabrous; leaves lanceolate, acuminate, serrulate; the floral ones ovate-lanceolate, nearly similar; capsules slightly hairy, cylindrical, striated, the valves septiferous; seeds oblong."

Plains of the Oregon east of Wallawallah, *Nuttall!*—We have not seen the flowers; but the species certainly belongs to this section, as Mr. Nuttall remarks, notwithstanding the dehiscence; the placenta usually separating into 4 pieces and remaining attached to the valves. The capsules are in sessile clusters, 4–5 together in the axils of the leaves.

§ 6. *Stigma capitate: tube of the calyx infundibuliform, rather shorter than the conspicuously pedicellate ovary: petals obovate, entire: stamens erect; the alternate filaments shorter: anthers oblong, fixed below the middle, versatile: capsules cylindrical, somewhat membranaceous, 4-nerved, on a slender pedicel: seeds oblong-obovate, ascending, in a single series; the testa membranaceous: stem annual: leaves usually all radical, ovate, petioled, fleshy: scape with several (small, yellow, diurnal?) flowers.*—Chylismia, Nutt. [illegible]

44. *Œ. scapoidea* (Nutt.! mss., under Chylismia): glabrous; leaves ovate or ovate-oblong, entire or obscurely denticulate, the limb about the length of the petiole; scape naked or rarely 1–2-leaved, 3–8-flowered; bracts minute, many times shorter than the pedicels; segments of the calyx ovate-lanceolate, about the length of the tube and the broadly obovate entire petals; style and longer stamens nearly the length of the petals; capsules oblong, cylindrical, very obtuse, acute at the base, longer than the pedicels.

Clay hills in the Rocky Mountains, *Nuttall!*—Scape 2–4 inches high. Leaves small. Corolla bright yellow, unchanged in fading, about 2 lines in diameter. Capsule half an inch in length.

§ 7. *Stigma capitate: tube of the calyx filiform or subulate, elongated, infundibuliform at the summit, marcescent: stamens erect; the alternate filaments shorter: anthers oval, fixed near the base: capsules (radical) conical-subulate, 4-sulcate, coriaceous, sessile: seeds somewhat ascending, in a double series, oblong, terete, with a crustaceous testa: acaulescent annuals: leaves pinnatifid: flowers (small) white or pale yellow, turning to rose-color.*—Taraxia, Nutt.

45. *Œ. breviflora:* stemless, minutely pubescent or somewhat canescent; leaves lanceolate, interruptedly pinnatifid, somewhat petioled; the segments short, obtuse, 1–2-toothed or entire; flowers (small) scarcely longer than the petioles; tube of the calyx subulate, rather longer than the linear-lanceolate segments; style shorter than the calyx-segments; capsules ovoid-oblong, deeply 4-grooved, subulate with the persistent calyx-tube.—Taraxia breviflora, *Nutt.! mss.*

Plains of the Rocky Mountains, with the succeeding. Leaves 3–4 inches long, in a crowded tuft. Capsule, with the persistent calyx, about an inch long. Seeds very numerous, oblong, terete, slightly incurved, smooth and even, or obscurely striate.

46. *Œ. Nuttallii:* stemless, pubescent; leaves lanceolate, pinnatifid, acuminate, petioled; tube of the calyx filiform, rather shorter than the leaves; the segments linear-lanceolate, acuminate, about the length of the petals; style longer than the calyx-segments; capsules (very numerous) subulate-conic, terete.—Taraxia longiflora, *Nutt.! mss.*

Plains in the Rocky Mountains, near Blackfoot River. July.—Leaves crowded. Flowers larger than in Œ. breviflora: the ovary gradually attenuate into the very slender tube of the calyx; which is 1–2 inches in length, the funnel-shaped summit rather shorter than the segments. The whole calyx is marcescent-persistent for a considerable period, but apparently less so than in the preceding species, where it is entirely persistent until the calyx is almost mature. On account of this remarkable peculiarity, Mr. Nuttall proposes these two plants as a new genus (Taraxia; in allusion to the resemblance which their leaves bear to those of Leontodon Taraxacum), and perhaps very justly; but the flowers and fruit agree so nearly in structure with the succeeding section (in which the calyx-tube is more or less marcescent) that we are unwilling to separate them, especially since the present species is somewhat intermediate. The persistent calyx is certainly a very remarkable character in this family.

§ 8. *Stigma capitate or subclavate: tube of the calyx filiform, very long (tardily deciduous), slightly dilated at the summit: stamens erect; the alternate filaments usually shorter: anthers oblong and fixed near the base, or linear, fixed near the middle, and versatile: capsules (radical) sessile, short: acaulescent: flowers (rather small) yellow.*—Primulopsis.

* *Perennial: flowers bright yellow, unchanged in fading: leaves oblong-lanceolate, denticulate, petioled.* (Heterostemon, *Nutt.*, not of *Wight & Arn.*)

47. *Œ. heterantha* (Nutt.): stemless, glabrous; leaves oblong-lanceolate, tapering into a slender petiole, the margin repand or nearly entire; tube of the calyx much shorter than the leaves; the segments linear-lanceolate, about the length of the broadly obovate retuse petals; alternate stamens much shortest; anthers oblong, fixed near the base; "capsules ovate-elliptic, pointed, smooth" (*Nutt.*); stigma large.—*Nutt.! in jour. acad. Philad.* 7. *p.* 22. Jussiæa acaulis, *Pursh! fl.* 1. *p.* 304 (locality doubtful).

Dry plains, sources of the Oregon, *Mr. Wyeth!* June.—Leaves resembling those of Primula lanceolata, attenuate at each end. Tube of the calyx about 2 inches long. Petals rather smaller than in Œ. ovata.—We have not seen the fruit.

48. *Œ. ovata* (Nutt.! mss.): stemless, pubescent; leaves ovate or oblong, erose-denticulate, tapering into a slender petiole; tube of the calyx nearly as long as the leaves; the segments oblong-lanceolate, shorter than the roundish entire petals; stamens almost equal; anthers linear, nearly as long as the filaments, fixed near the middle; stigma small, somewhat clavate.

"In moist plains in the immediate vicinity of Monterey, California: common. March.—Leaves almost exactly those of Viola primulæfolia. Flowers bright yellow, about an inch in diameter. Ovaries radical, obtuse: the capsules unknown. Stigma somewhat clavate. *Nutt.*—Mr. Nuttall justly remarks, that the present plant shows the insertion of the anthers and the relative length of the filaments to be of less consequence in this genus than has been supposed.

* * *Annual: flowers yellow, turning to green in fading: leaves spatulate-linear, sessile.*

49. *Œ. graciliflora* (Hook. & Arn.): stemless, very hairy; leaves linear, tapering towards the base, mostly entire; tube of the calyx rather shorter than the leaves; the segments much shorter than the broadly obcordate petals; alternate stamens shorter; anthers oval, fixed near the base; ovary ovate, 4-angled.—*Hook. & Arn.! bot. Beechey, suppl. p.* 341.

California, *Douglas!*—A very distinct small species; the leaves 1–2 inches long and scarcely a line in breadth; the flowers large for the size of the plant (about 10 lines in diameter when expanded). From the appearance of the ovary, we suspect the capsule is somewhat 4-winged, or perhaps 4-grooved.

§ 9. *Stigma capitate: tube of the calyx obconic or infundibuliform, usually much shorter than the ovary: petals obovate, entire or emarginate: stamens erect; the alternate filaments mostly shorter: anthers linear-oblong or roundish: capsules subulate, oblong or linear, mostly sessile, membranaceous, often curved or contorted; the dissepiments thin and often evanescent: seeds ascending, in a single series, oval or oblong, with a membranous testa: caulescent: flowers diurnal.*—SPHÆROSTIGMA, Seringe. (Holostigma, *Spach.*)

* ***Mostly annual: flowers (mostly rather large) axillary, yellow turning to bluish-green in fading: tube of the calyx infundibuliform or obconic, shorter than the segments: stamens unequal, shorter than the petals: anthers short, or often oblong-linear and fixed near the middle: capsules acutely quadrangular, attenuate at the apex, usually curved or spirally contorted when mature.***

50. *Œ. viridescens* (Hook.): suffruticose, densely tomentose-canescent; stems much branched from the base, ascending; leaves ovate or oblong, entire or slightly serrulate ("coarsely toothed," *Hook.*), sessile; flowers large; tube of the calyx much shorter than the segments; petals cuneiform-obovate, very broad, emarginate (golden yellow with a brownish spot at the base), twice the length of the slightly unequal stamens; anthers oblong-linear, fixed near the middle; style longer than the stamens; capsules hairy, acutely quadrangular, recurved, rather acute.—*Hook. fl. Bor.-Am.* 1. *p.* 214. Œ. maritima, *Nutt.! mss.*

California, on the sandy beach near St. Diego, *Nuttall!* N. W. Coast (according to Hooker, but probably California), *Menzies.* April–May.—"Apparently a perennial, with large and showy flowers about the size of those of Œ. biennis; the plants spreading out so as to make a wide silvery carpet. Leaves about half an inch long, acute or obtuse. Seeds numerous, small, ovate-oblong, acute at the base." *Nutt.*—Our description is wholly drawn from Mr. Nuttall's plant, which Hooker (*bot. Beechey's voy. suppl. p.* 341.) pronounces to be identical with Œ. viridescens, although we should have not supposed it from the description, which was doubtless made from imperfect materials. We see no approach to coarsely serrate leaves. The base of the stem is decidedly shrubby.

51. *Œ. bistorta* (Nutt.! mss.): somewhat hirsute; stems decumbent, much branched from the base; radical leaves spatulate-linear, petioled; cauline ones lanceolate, mostly sessile, acute or acuminate, sharply denticulate; flowers (rather large) axillary; tube of the calyx infundibuliform, rather shorter than the segments; petals broadly obovate, entire, more than twice the length of the longer stamens; anthers oblong, fixed near the middle; style longer than the stamens; stigma large and thick; capsules acutely quadrangular, attenuate at the summit, somewhat pubescent or hirsute, spirally contorted or coiled.—Œ. heterophylla, *Nutt.! mss.*, not of *Spach.* Holostigma Bottæ, *Spach, Onagr. p.* 16?

β. leaves rather smaller and more strongly toothed; capsules completely coiled when mature.—Œ. bistorta, *Nutt.! mss.*

St. Diego, California, *Nuttall!* (Southern California, *Botta?*)—In foliage this species resembles Œ. micrantha; but the leaves are acute and mostly smaller, the capsules shorter, and the flowers about as large as in Œ. cheiranthifolia, from which it differs in its smaller and toothed leaves, much contorted capsules, &c. The flowers, according to Nuttall, are golden yellow, usually with a bright brown spot at the base of each petal. Holostigma Bottæ of Spach, according to the description, accords for the most part with this plant, but not completely. We have not adopted the specific name because there is another Œ. (Godetia) Bottæ. We have taken the name given by Nuttall to a mere variety of his Œ. heterophylla, since the latter name has already been employed, and there is also a Holostigma heterophyllum of Spach.

52. *Œ. cheiranthifolia* (Hornem.): stems branching from the base, ascending, puberulent; leaves somewhat canescently pubescent, nearly entire, obtuse, petioled; the lower ones oblong-spatulate, with slender petioles; the upper ovate-oblong; flowers (rather small) axillary; calyx hairy; the tube infundibuliform, as long as the ovate-lanceolate segments; petals broadly obovate, longer than the stamens and style; anthers cordate-oval; capsules short, acutely quadrangular, attenuate at the point, hairy, recurved or contorted.—*Hornem. hort. Hafn.; Lindl.! bot. reg. t.* 1040; *DC. prodr.* 3. *p.* 46. Œ. spiralis, *Hook.! fl. Bor.-Am.* 1. *p.* 214, *& bot. Beechey, suppl. p.* 341. Holostigma cheiranthifolium, *Spach! Onagr. p.* 15. Sphærostigma cheiranthifolium, *Fisch. & Meyer, ind. sem. St. Petersb.* (excl. β.)

California, *Douglas!* &c. N. W. Coast, *Menzies*, according to Hooker, but perhaps from California.—The original Œ. cheiranthifolia is said to come from Chili; but this is possibly a mistake. The plant is not uncommon in cultivation.

53. *Œ. micrantha* (Hornem.): hirsute; stems ascending, flexuous; leaves linear-oblong, acutely denticulate, rather obtuse; the radical ones spatulate, petioled; flowers (very small) axillary; calyx hirsute; the tube obconic, about half the length of the linear-oblong segments; petals obovate, twice the length of the longer stamens; anthers roundish; capsules elongated, slender, acutely quadrangular, acute, hirsute with spreading hairs, much contorted.—*Hornem. hort. Hafn.; Hook. & Arn.! bot. Beechey, suppl. p.* 341. Œ. hirta, *Link, enum.* 1. *p.* 378. Œ. asperifolia, *Nutt.! mss.* Holostigma micranthum, *Spach, l. c.*

California, *Douglas! &c. Nuttall!*—Leaves (1–2 or 3 inches long) and upper part of the stem strigose-hirsute and somewhat canescent. Flowers (about 2 lines in diameter) beginning to appear at the very base of the stem, as in most of the allied species. Capsules almost an inch long, variously curved, and often spirally coiled.

* * *Perennial: flowers (small) in a close secund circinate spike, white, odorous: tube of the calyx linear-infundibuliform, as long as the ovary: stamens slightly unequal, as long as the petals: anthers oblong, fixed near the middle: capsules short, cylindrical, pointed, slightly curved.* (Gyranthus, *Nutt.*)

54. *Œ. Boothii* (Dougl.): viscidly pubescent above; stem decumbent, branched; leaves ovate, acute or acuminate, denticulate-serrate, nearly glabrous above, somewhat hirsute beneath, petioled; flowers numerous, in a crowded unilateral spike; calyx viscidly hairy; the tube slender, as long

as the ovary, longer than the lanceolate-oblong segments; petals obovate, entire, rather shorter than the slightly unequal stamens and style; anthers linear-oblong, fixed near the middle; stigma subglobose; capsules cylindrical, viscid-pubescent, striate, attenuate above, arcuate-recurved.—*Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 213. Œ. lithospermoides, *Nutt.! mss.*

β. pygmæa: smaller; upper leaves lanceolate, sessile.—Œ. pygmæa, *Dougl. l. c.* (fide *Hook.*)

Low gravelly hills near the branches of Lewis and Clarke's River, lat. 46°, and in barren sands near the Utalla River (*β.*), *Douglas!* On the sides of basaltic hills east of Wallawallah, rare, *Nuttall!* Aug.–Sept.—Stem 8–10 inches high. Spike 2–3 inches long; the lower bracts resembling the leaves, but smaller; the others minute. Tube of the calyx, with the ovary, nearly an inch long. Style about the length of the stamens. Capsules about half an inch long.—The aspect of the plant, as well as the inflorescence, is strikingly like that of a Boragineous plant.

* * * *Perennial: flowers in a dense spike (which is sometimes drooping at the apex), yellow, unchanged in fading: tube of the calyx tubular-infundibuliform, nearly the length of the ovary: stamens nearly equal, about the length of the petals: anthers oblong, fixed by the middle: capsules subulate, obtusely quadrangular, somewhat recurved.*

55. *Œ. gauræflora:* glabrous; stem erect, "suffruticose at the base," glandular-puberulent at the summit; leaves linear-lanceolate, attenuate at each end, entire or somewhat toothed, slightly pubescent when young; flowers (small) numerous, spicate; tube of the calyx tubular-infundibuliform, nearly the length of the linear ovary, as long as the lanceolate segments; petals obovate, slightly unequal, about the length of the calyx-segments, the nearly equal stamens, and the style; anthers oblong, fixed by the middle; stigma subglobose; capsules subulate from a rather broad base, somewhat quadrangular, at length more or less arcuate-recurved.—Gaura decorticans, *Hook. & Arn.! bot. Beechey, suppl. p.* 343.

California, *Douglas!*—Stem with a white loose bark, like that of Œ. albicaulis. Leaves 1–3 inches long, veinless, except the midrib. Spike dense, obtuse, elongated in fruit: bracts linear or subulate, shorter than the ovary. Flowers, including the ovary, about half an inch long; the calyx yellowish; the petals (2 lines in length) apparently bright yellow. Style at length a little longer than the stamens. Capsules an inch long, glabrous, with a long attenuate point, dehiscent; the valves 1-nerved. Seeds numerous, linear-oblong.—The fruit appears to have been wanting in the specimens which Hooker and Arnott described, although it is nearly mature in one of ours. We have not seen the base of the stem.

* * * * *Annual: flowers (small, often minute) axillary or towards the summit of the branches, yellow, unchanged in fading: tube of the calyx usually very short: stamens unequal, shorter than the petals: anthers roundish: capsules usually linear and slender, sometimes subulate, straight or somewhat contorted.*

56. *Œ. dentata* (Cav.): slightly pubescent; stem slender, simple or branched, erect or ascending; leaves linear or lanceolate-linear, very narrow, acutely and remotely denticulate, attenuate at the base; tube of the calyx infundibuliform-obconic, about half the length of the segments, many times shorter than the filiform ovary; petals (about 4 lines long) broadly obovate, nearly entire, about twice the length of the style and longer stamens;

capsules very slender.—*Cav. ic.* 4. *p.* 67, *t.* 398, not of *Hook. & Arn.* ex *Fisch. & Meyer*, scarcely of *Seringe*. Holostigma argutum, *Spach*, *Onagr. p.* 13. (ex descr.) [illegible]

California, *Douglas!*—This species is not noticed in Hooker and Arnott's account of Douglas's Californian collection: our specimen is from a set presented by the London Horticultural Society. It is a slender plant, scarcely a foot high; the leaves and ovaries pubescent with minute spreading hairs; the flowers few (yellow) and near the summit. It seems rather difficult to ascertain which is the true Œ. dentata of Cavanilles; but our plant agrees so minutely with the description of Mr. Spach (from a specimen of Dombey) that we can hardly suppose it to be a different species. We want the fruit, but it is evident that the capsule is linear. The leaves are about half an inch long, and less than a line wide.

57. *Œ. parvula* (Nutt.! mss.): almost glabrous (minutely puberulent with spreading hairs); stem much branched, slender; leaves very narrowly linear, obtuse, nearly entire; flowers (very small) mostly towards the end of the branches; tube of the calyx infundibuliform-obconic, about the length of the lanceolate-oblong segments, many times shorter than the filiform ovary; petals (scarcely a line long) obovate, entire, about thrice the length of the longer stamens and the large stigma; capsules linear, elongated, slightly 4-sided, torulose, nearly straight.

Plains of the Rocky Mountains towards Lewis's River, *Nuttall!*—Plant 4–8 inches high. Leaves nearly an inch long, scarcely half a line wide. Capsules almost filiform, 6–10 lines long, apparently not attenuated towards the summit. Stigma very large for the size of the flower. [illegible] Hook. !

58. *Œ. contorta* (Hook.): glabrous; stem weak, branching; leaves linear, entire; flowers numerous, minute; tube of the calyx infundibuliform, as long as the segments; capsules cylindrical, elongated, curved or contorted, torulose. *Lehm. in Hook. fl. Bor.-Am.* 1. *p.* 214.

Sandy barren soil on the interior banks of the Oregon River, *Douglas.*—Plant 3–5 inches high, with the habit of Epilobium: the stem branching from the base. Petals scarcely a line long, equalling the tube of the calyx. Capsules an inch or more in length, similar to those of Epilobium. Seeds ovate, angled. *Lehm.*—This species is unknown to us, and seems different from any of Mr. Nuttall's extensive collection in this genus, unless it should prove to be the same with his Œ. parvula, in which the capsules may become curved when old.

59. *Œ. alyssoides* (Hook. & Arn.): low, branched from the base, puberulent; lower leaves much largest, oblong-lanceolate, unequally toothed, attenuate into a petiole, rather shorter than the stems, the upper ones linear; spike leafy, unilateral, circinate; ovaries very slender, sessile; petals about the length of the filaments, shorter than the style; capsules contortuplicate, striate, torulose. *Hook. & Arn., bot. Beechey, suppl. p.* 340; *Hook. ic. pl. ined.*

California, *Douglas.*—We have not seen this species. The stems are said to be 3–5 inches long, ascending; the central one erect and floriferous from the base; the flowers copious, retaining their color (pale yellow) when dry; the upper portion of the raceme recurved until the flowers expand; the capsules about an inch long, and not half a line thick at the base, somewhat terete, slightly attenuate at the summit. The size of the flowers and the form of the calyx-tube are not mentioned.

60. *Œ. epilobioides* (Nutt.! mss.): almost glabrous; stem slender, erect, branching above; leaves linear-oblong, obtuse, remotely denticulate, attenuate into a short petiole; flowers few, towards the summit of the branches;

tube of the calyx obconic (very short), many times shorter than the linear ovary; petals ("ochroleucous," *Nutt.*, about 2 lines long) broadly oval, entire, rather acute, twice the length of the longer stamens and the style; stigma capitate, somewhat 4-lobed; capsules erect, nearly straight; linear, slightly quadrangular, scarcely attenuate at either end, on a short but distinct pedicel.

St. Diego, California, *Nuttall!* May.—Plant a foot or more high, with the habit of an Epilobium, very minutely puberulent. Leaves scattered, about half an inch long and 1–2 lines wide. Tube of the calyx minute. Anthers oblong, attached near the base; those of the shorter stamens smaller. Capsules an inch long and about half a line in diameter, cylindrical, but slightly angled.

61. *Œ. strigulosa:* pubescent with minute hairs, at length nearly glabrous; stem slender, branched near the base; leaves linear, denticulate, attenuate towards the base; flowers (very small) axillary; tube of the calyx obconic, very short, about half the length of the oblong-lanceolate (reddish) segments; ovary filiform; petals (a line long) broadly obovate, entire, exceeding (by one-third) the longer stamens and the large stigma; capsules elongated and very slender, slightly quadrangular, torulose, sessile, of nearly the same diameter throughout, at length incurved or somewhat contorted.—Œ. siliquosa, *Nutt.! mss.*. Sphærostigma strigulosa, *Fisch. & Meyer, ind. sem. St. Petersb.* (1835) *p.* 50. (ex descr.)

Near St. Diego, California, *Nuttall!* (California, *Fisch. & Meyer.*) Also in the Rocky Mountain plains near Lewis's River, *Nuttall!*—Stem 8–12 inches high. Leaves scarcely an inch long, less than a line wide. Capsules an inch long, scarcely half a line wide. Seeds oblong, terete.—The plant, as Mr. Nuttall remarks, has wholly the appearance of a small Epilobium.

62. *Œ. Andina* (Nutt.! mss.): "very small, depressed, canescently puberulent; leaves linear-spatulate, attenuate into slender petioles, entire, obtuse; flowers minute, axillary, very numerous; tube of the calyx infundibuliform, rather shorter than the segments, many times shorter than the subulate ovary; petals (less than half a line long) obovate, entire, scarcely exceeding the longer stamens, shorter than the style; stigma large; capsules canescent, somewhat 4-sided, attenuate-subulate above, straight.

"Dry plains in the Rocky Mountains, near the Black-Foot River.—A very remarkable and distinct species. Stem about an inch and a half high, sending off decumbent branches from the base. Leaves less than a line wide, half an inch or more in length. Flowers commencing with the lowest leaves. Capsules large for the size of the plant, 3–4 lines long: the dissepiments almost wanting. Seeds cylindrical, on a filiform placenta." *Nutt.*

Œ. media (Link. enum. Berol.) appears from the description to be Œ. linearis, except that the capsules are said to be sessile.

Œ. tetragona (Roth) is doubtless Œ. fruticosa.

Œ. alata, Raf. fl. Ludov.

Œ. viscosa, Raf. fl. Ludov.

4. GAYOPHYTUM. *Adr. Juss. in ann. sci. nat.* 25. *p.* 18, *t.* 4.

Tube of the calyx not at all produced beyond the ovary; the limb 4-parted, reflexed. Petals 4. Stamens 8; the alternate ones (opposite the petals) minute and mostly sterile: filaments filiform: anthers subglobose, fixed above the middle; those of the shorter stamens minute. Ovary oblong or linear, compressed, 2-celled: style short: stigma large, capitate, rarely clavate. Capsule membranaceous, linear or linear-clavate, 2-celled, 4-valved, many-seeded; the valves revolute, the 2 opposite ones bearing the narrow dissepiment, which is at length separable; the 2 others rather smaller. Seeds naked, obovate or oblong, ascending, imbricated in a single series in each cell. Cotyledons oval: radicle obtuse.—Small and much branched annual herbs, (natives of the Western portion of America) with linear entire nearly sessile veinless (often revolute) leaves, and minute flowers. Petals (pale yellow, *Juss.* but this is doubtful) rose-color. (fide *Nutt.* & spec.) Capsules pedicellate.

The discovery of several additional species of Gayophytum certainly tends to confirm the genus; but some species of Œnothera (Sphærostigma) with minute flowers and very short calyx-tube approach it somewhat too closely. Sphærostigma minutiflorum, *Fisch. & Meyer*, judging from a specimen in flower only, belongs to this genus.

* *Stigma small, clavate (flowers larger): pedicels as long as the linear-clavate torulose capsules: seeds 6–10 in each cell.*

1. *G. diffusum:* nearly glabrous; stem divaricately and dichotomously much branched above; flowers terminating the branches; segments of the calyx more than half the length of the linear-subclavate minutely canescent ovary, shorter than the petals; stamens all fertile; the longer ones about the length of the petals, with roundish-oval anthers; the shorter with smaller globose anthers; style longer than the stamens; stigma small, subclavate; capsules oblong, acute at the base, about the length of the capillary pedicels. Œnothera (Trichomeria) diffusa, *Nutt.! mss.*

Rocky Mountains and plains of Oregon, *Nuttall!* July.—Stems 6–12 inches high, with numerous filiform branches. Flowers nearly 2 lines in diameter. Capsules about one-fourth of an inch in length. Radicle shorter than the oval cotyledons.—The shorter filaments are more than half the length of the longer ones, with nearly similar, but smaller, apparently polleniferous anthers. Excepting the larger flowers, it wholly accords with the succeeding species in appearance.

* * *Stigma large, capitate (flowers minute).*

† Capsules short, linear-clavate, on slender pedicels: seeds 6–10 in each cell.

2. *G. ramosissimum:* glabrous, divaricately branched; flowers (very minute) towards the extremity of the branches; segments of the calyx lanceolate-oblong, acute, as long as the petals, rather shorter than the clavate-oblong ovary; longer stamens rather shorter than the petals (the 4 alternate ones wanting?); capsules oblong, acute at the base, few-seeded, shorter than the capillary pedicels.—Œnothera (Trichomeria) ramosissima, *Nutt.! mss.*

"Rocky Mountains &c., with the preceding, from which it is distinguished principally by its smaller flowers and larger round stigma." *Nuttall.*—This species, judging from an imperfect Chilian specimen, nearly resembles the original G. micranthum, *Hook. & Arn.* (G. humile, *Adr. Juss.*), and the flowers are about the same size (scarcely a line in diameter); but it is readily distinguished by the capillary pedicels. The flowers in our specimen are not in a good state for examination, and we do not observe the smaller stamens.

† † **Capsules linear, on short pedicels: seeds numerous: flowers axillary.**

3. *G. cæsium:* clothed throughout with a minute soft spreading pubescence; stem ascending, much branched from the base; leaves linear-spatulate, short; flowers (minute) axillary throughout the branches; segments of the calyx about the length of the petals; longer stamens one-third shorter than the petals; the 4 alternate ones very short, with minute sterile anthers; capsules twice the length of the leaves, linear, obtuse, attenuate into a short pedicel.—Œnothera (Trichomeria) cæsia, *Nutt.! mss.*

Oregon, on dry open plains near Wallawallah, *Nuttall!*—Stems about a foot high, producing flowers from near the base to the summit: pubescence soft and dense. Leaves of the branches 3 lines long. Capsules 6–8 lines long, slightly torulose, tapering to the base. Seeds linear-oblong, very small.

4. *G. racemosum:* glabrous, branching from the base; the branches mostly simple, ascending; leaves short, linear, rather obtuse; flowers (very minute) axillary throughout the branches; segments of the calyx about the length of the petals, slightly exceeding the longer stamens; shorter stamens with minute sterile anthers; capsules longer than the leaves, linear, rather obtuse, straight or slightly curved, tapering at the base into a very short pedicel.—Œnothera (Trichomeria) racemosa, *Nutt.! mss.*

Elevated plains of the Rocky Mountains near Black-Foot River, *Nuttall!* July.—Stems 4–8 inches high. Capsules half an inch long, very slender, minutely torulose.—Resembles the preceding.

5. *G. Nuttallii:* glabrous, stem erect, branching; leaves linear, rather acute; flowers (minute) axillary, but mostly towards the extremity of the branches; segments of the calyx as long as the petals and style, rather exceeding the longer stamens; the alternate stamens very short, with minute sterile anthers; capsules shorter than the leaves, linear, slender, 2-grooved, rather acute at each end, slightly pedicellate, at length often curved.—Œnothera (Trichomeria) micrantha, *Nutt.! mss.*, not Gayophytum micranthum, *Hook. & Arn.*

Rocky Mountains, *Nuttall! Douglas!*—Stem 6–12 inches high, branching above. Leaves 1–2 inches long. Capsules 8–10 lines in length, minutely torulose, slender, subsessile, very many-seeded.

5. EULOBUS. *Nutt. mss.*

Tube of the calyx scarcely produced beyond the ovary; limb 4-parted, reflexed; the very short campanulate base invested with a thickened disk. Petals 4, rhombic-obovate. Stamens 8, inserted into the margin of the disk, shorter than the petals, the alternate ones much shorter: filaments filiform: anthers oblong, fixed below the middle, at length versatile; those of the shorter stamens roundish and much smaller, fixed by the middle. Ovary linear-filiform, 4-celled: style somewhat exceeding the longer stamens: stigma rather large, capitate. Capsule linear, very long and narrow, 4-sided, nearly sessile, straight, refracted, imperfectly 4-celled; the dissepiments very thin and narrow, adherent to the valves. Seeds very numerous, obovate-oblong, naked, erect.—A rather large virgately branched annual herb, with fistulous stems. Leaves scattered; the lower ones oblong, unequally pinnately lobed; the upper linear, nearly sessile, few, denticulate. Flowers (rather large) axillary along the virgate branches: petals white changing to red, evanescent. [illegible]

E. Californicus (Nutt.! mss.)

California, *Douglas!* Bushy plains near St. Diego, California, *Nuttall!* April.—Stem (about 2 feet high) and branches thick, glabrous, with few scattered leaves. Calyx-segments lanceolate-linear; the extremely short tube lined with an orange-red disk. Petals about half an inch long, rather obtuse. Capsules 3 inches or more in length, very narrow, obtusely quadrangular, strongly refracted; the valves somewhat membranaceous.—This plant is not noticed in Hooker and Arnott's account of Douglas's Californian collection. It is so remarkably like some Cruciferous plant in appearance, that we were about to describe it under the name of Turritopsis, doubting however whether it should not rather form a subgenus of Œnothera, notwithstanding its peculiar habit. It has been cultivated in the garden of the London Horticultural Society.

6. CLARKIA. *Pursh, fl.* 1. *p.* 260, *t.* 11.

Tube of the calyx slightly prolonged beyond the ovary, infundibuliform, and, with the 4-parted limb, deciduous. Petals 4, unguiculate, dilated, 3-lobed or entire; the claw with 2 minute teeth. Stamens 8; those opposite the petals shorter: anthers oblong or linear, fixed near the base, revolute after impregnation; those of the alternate shorter stamens smaller, often deformed and sterile. Style filiform, surrounded at the base by an annular epigynous disk: stigma with 4 obovate or oval cruciate lobes. Capsule 4-sided or somewhat cylindrical, attenuate at the summit, 4-celled, 4-valved. Seeds numerous, ascending, in a single series, obovate, minutely granulose.—Annual herbs (natives of Oregon and California), with opposite or alternate entire or slightly denticulate leaves, more or less petioled. Flowers axillary, large, purple or lilac-color, rarely white.

1. *C. pulchella* (Pursh): leaves linear or lanceolate; petals large, broadly cuneiform, tapering into a long claw, which is furnished near the middle with a small reflexed tooth on each side; the lobes spreading and denticulate; alternate stamens abortive; the perfect ones with a glandular scale at the base of each; lobes of the stigma much dilated, glabrous; capsules pedicelled.—*Pursh! l. c.; Lindl.! bot. reg. t.* 1100*; Hook.! bot. mag. t.* 2918, *& fl. Bor.-Am.* 1. *p.* 214. [illegible]

β. petals less deeply lobed and more denticulate. *Hook. l. c.*

Dry sandy soil, Oregon! & Northern California! towards the Rocky Mountains.—Flowers lilac-purple, sometimes white. Stigma white.

2. *C. elegans* (Lindl.): leaves ovate or ovate-lanceolate, remotely denticulate, on short petioles; petals undivided, rhombic or triangular-ovate, with a very slender toothless claw; stamens all fertile, those opposite the petals shorter, with a hairy scale at the base of each; lobes of the stigma short and hairy; capsules nearly sessile, hairy.—*Lindl.! bot. reg. t.* 1575*; Don, in Brit. fl. gard.* (*ser.* 2) *t.* 209*; Hook. & Arn.! bot. Beechey, suppl. p.* 340. Phæostoma Douglasii, *Spach, Onagr. p.* 74. (excl. syn. C. rhomboidea.)

Northern California, *Douglas!*—Flowers smaller than in C. pulchella, purple: the scales at the base of the filaments clothed with deep red hairs. Stigma purple.

3. *C. rhomboidea* (Dougl.): leaves ovate or oblong, on slender petioles; petals rhomboidal, undivided, the claw short and 2-toothed; stamens all fertile, with a villous scale at the base of each, those opposite the petals shorter; lobes of the stigma short and hairy; capsules on short pedicels, nearly glabrous.—*Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 214; *Lindl.! bot. reg. t.* 1981; *Hook. & Arn. l. c.* C. gauroides, *Don, in Brit. fl. gard.* (*ser.* 2) *t.* 379.
Oregon! and Northern California, at a distance from the coast.—Flowers small. Petals about the length of the calyx, lilac-purple, pale and blotched with purple near the base. Stigma purple.

4. *C. unguiculata* (Lindl.): leaves oblong, sessile, toothed; ovaries and calyx villous; petals unguiculate; the limb somewhat sagittate, rounded, half the length of the claw. *Lindl. bot. reg. fol.* 1981.
California, *Douglas.*—Hooker and Arnott have not noticed this species in the Supplement to Capt. Beechey's Voyage, where they observe that C. elegans varies much in the hairiness of the ovary and calyx.

7. EUCHARIDIUM. *Fisch. & Meyer, 2nd ind. sem., St. Petersb.* 1835; *Lindl. bot. reg. t.* 1962.

Tube of the calyx prolonged beyond the ovary, filiform, deciduous; the limb 4-parted. Petals 4, unguiculate, 3-cleft. Stamens 4, opposite the sepals: filaments filiform-subulate, shorter than the petals: anthers oblong, fixed near the base (revolute when dry). Style filiform, surrounded at the base by a short cylindrical disk: stigma 4-lobed, 2 of the lobes smaller. Capsule oblong-linear, somewhat cylindrical, 4-celled, 4-valved. Seeds numerous, imbricated upwards, with a narrow membranaceous wing-like margin.—A small annual ascending herb, with opposite or mostly alternate ovate petiolate entire leaves. Flowers axillary, sessile, about the length of the leaves: petals purplish-rose-color, marked with 3 white lines and 2 purple spots.

E. concinnum (Fisch. & Meyer, l. c.)
California, at the Russian colony Ross (v. sp. cult.) and St. Francisco, *Douglas.*—Plant with much the appearance of Clarkia rhomboidea, but with smaller flowers.

Subtribe 3. GAURINEÆ, *Spach.*—Calyx deciduous from the summit of the ovary after flowering. Petals somewhat unequal or turned to one side. Fruit dry and indehiscent or nearly so, 1-celled (usually by abortion), 1–4-seeded. Seeds suspended, naked.—Leaves alternate.

8. GAURA. *Linn.; Gærtn. fr. t.* 127; *Lam. ill. t.* 281.

Gaura & Schizocarya, *Spach.*

Tube of the calyx much prolonged beyond the ovary, cylindraceous or sometimes infundibuliform, deciduous; the segments 4, or rarely 3, about the length of the tube, reflexed. Petals 4, rarely 3, unguiculate, mostly a little unequal or one-sided. Stamens 8, rarely 6, somewhat declined; those opposite the petals a little shorter: anthers fixed near the middle. Ovary 4- (rarely 3-) celled, with 1–2 suspended ovules in each: style filiform, declined or deflexed, thickened at the apex; stigma 4- (rarely 3-) lobed. Fruit 3–4-ribbed or angled, somewhat ligneous, indehiscent and nut-like, or sometimes 2–4-cleft at the apex, usually by abortion 1-celled and 1–4-seeded. Seeds not appendiculate or comose.—Perennial, or sometimes annual or biennial, herbs, or suffruticose plants, with entire or toothed mostly sessile alternate leaves. Flowers in terminal spikes or racemes: petals white or rose-color, usually changing to red.

1. *G. biennis* (Linn.): stem villous-pubescent; leaves oblong-lanceolate, acute, repand-denticulate, pubescent, or at length glabrous above; segments of the calyx about the length of the tube, rather longer than the spatulate-elliptical slightly declined petals; fruit oval-oblong, with 4 strong obtuse ribs, and 4 inconspicuous intermediate ones, slightly acuminate, tapering at the base, almost sessile.—*Linn.! spec.* 1. *p.* 347; *Lam. ill. t.* 281; *Michx.! fl.* 1. *p.* 286; *Bot. mag. t.* 389; *Ell. sk.* 1. *p.* 346; *DC.! prodr.* 3. *p.* 44.

β. Pitcheri: stem somewhat canescently pubescent; the leaves clothed with a very minute appressed pubescence.—G. Pitcheri, *Pickering! in herb. acad. Philad.*

In dry soil, along rivers, &c., Canada! to Georgia, and west to Missouri! *β.* Arkansas, *Dr. Pitcher!* July–Aug.—Stem 3–5 feet high. Bracts caducous. Flowers crowded. Calyx a little colored. Petals at first white or pale rose-color, turning to red. Anthers oblong-linear. Fruit maturing 1–3 or 4 seeds, minutely villous when young.

2. *G. angustifolia* (Michx.): stem herbaceous, pubescent; leaves linear (often fascicled in the axils) undulate, denticulate, acute, slightly pubescent, the lowermost oblong-lanceolate; segments of the calyx much longer than the tube and the spatulate-petals; fruit sessile, ovate, scarcely acute at either end, with 3–4 strong acute or somewhat winged angles.—*Michx.! fl.* 1. *p.* 226; *Ell. sk.* 1. *p.* 445; *Seringe! in DC. prodr.* 3. *p.* 44; *Spach! Onagr. p.* 58. G. biennis, *Walt.! Car. p.* 128. G. undulata, *Desf. cat.* ex *Spach.* G. fruticosa, *Jacq. ic. rar. t.* 457, ex *Seringe.*

In sandy soil, S. Carolina! Georgia! and Florida! July–Aug.—Stem 2–3 feet high, sparingly branched. Spikes slender. Flowers small. Petals white. Anthers oval.

3. *G. filipes* (Spach): stem suffruticose at the base, glabrous or puberulent; leaves linear or oblong-linear (often crowded and fascicled in the axils), acute or attenuate at the base, remotely sinuate-toothed or denticulate, sometimes almost pinnatifid, nearly glabrous, often obtuse, mucronate; branches of the panicle very slender; calyx and ovary canescent; the segments longer than the tube, and exceeding the oblong-obovate or spatulate petals; fruit on a filiform pedicel thickened at the apex, obovate-clavate, 4-angled towards the summit.—*Spach! Onagr. p.* 59. G. Michauxii, *Spach, l. c.*

β. major: flowers larger; leaves acute, denticulate.—G. longiflora, *Spach! l. c.?*

In dry mostly barren soil, Virginia, to Georgia! Florida! and Alabama! and from Ohio! to Arkansas! *β.* Kentucky, *Dr. Short!* and Florida, *Dr. Chapman!* July–Aug.—Stem 2–4 feet high, virgate, branching above, paniculate at the summit; the branches of the panicle often leafless and almost filiform. Flowers loose, rather smaller than in G. biennis: petals white, turning reddish. Anthers linear-oblong.—In this, as in the other species, the form of the fruit varies considerably in the different stages of growth. In our var. β. the flowers are nearly as large as in G. biennis, and the leaves often assume a reddish tint. It differs from G. longiflora, *Spach*, only in the larger flowers and the shorter tube of the calyx as compared with the segments. The length of the pedicel is somewhat variable.

4. *G. sinuata* (Nutt.): stem suffruticose and branching at the base, naked above, glabrous; leaves lanceolate-linear, acute, remotely and acutely sinuate-toothed, glabrous; flowering branches slender, nearly simple, naked; flowers loose, pedicelled; segments of the calyx much longer than the obconic tube; petals oblong-obovate, on very slender claws, much shorter than the calyx-segments.—*Nutt.! in DC. prodr.* 3. *p.* 44; *Spach! l. c.*

Arkansas! *Nuttall!* Texas, *Drummond!*—Leaves rather thick, veinless, with one or two salient teeth on each side. Bracts minute, cuspidate. Ovary linear-oblong.—The stems are short, diffuse or decumbent, and very leafy, sending off slender and quite naked flowering branches 8–12 inches in length. We have not seen the fruit. Mr. Nuttall states it to be lanceolate, and acuminate at each end.

5. *G. villosa* (Torr.): stem suffruticose and with numerous short branches at the base, canescently puberulent, with villous hairs intermixed; leaves of the short sterile branches very numerous, tomentose-canescent, lanceolate, remotely and acutely toothed, or rarely entire, acute; flowering branches naked and elongated, glabrous, often paniculate; bracts subulate, minute, much shorter than the ovary; calyx canescent; the segments twice the length of the somewhat ventricose tube, much longer than the petals; young fruit linear, 4-sided, slightly attenuate at each end, on a filiform pedicel, at length reflexed.—*Torr.! in ann. lyc. New York,* 2. *p.* 200.

Near the sources of the Canadian River, *Dr. James!* Arkansas? *Mr. Beyrich!*—Stem about 3 feet high. Leaves an inch or more in length, equally pubescent on both sides. Flowering branches often virgately branched above, perfectly leafless. Racemes loosely flowered; the flowers as large as in G. sinuata. Ovary longer than the free portion of the calyx-tube, about the length of the pedicel; the calyx-segments about the length of the tube taken with the ovary. Petals rose-color, with very slender claws. Anthers linear. Immature fruit very slender, about 4 lines long. The floral organs are sometimes ternary.

6. *G. coccinea* (Nutt.): somewhat canescent; stems suffruticose and fastigiately branched from the base, very leafy, ascending; leaves lanceolate, repand-denticulate or entire, closely sessile; flowers in simple spikes terminating the leafy branches; bracts linear, rather persistent, longer than the ovaries; segments of the calyx linear-oblong, rather shorter than the narrowly infundibuliform tube, about the length of the roundish unguiculate petals; fruit elliptical, sessile, short, terete, 4-sided above.—*Nutt.! in Fraser's cat., & gen.* 1. *p.* 249; *Pursh, fl. suppl.* 2. *p.* 733; *DC. l. c.*; *Torr.! in ann. lyc. New York,* 2. *p.* 200; *Lehm.! in Hook. l. c.* Schizocarya? crispa, *Spach, l. c.*

β. puberulent, but not canescent; leaves mostly smaller, often entire; segments of the calyx linear; petals spatulate-obovate.—G. coccinea β. integerrima, *Torr.! l. c.* G. marginata, *Lehm.! l. c.*

γ. stem glabrous below; leaves linear, mostly entire, small, and, with the branches, puberulent.—G. parvifolia, *Torr.! l. c.*

δ. almost glabrous; leaves narrowly lanceolate, undulate; ovaries nearly glabrous.—G. glabra, *Lehm.! l. c.*

Arkansas! to the plains of the Saskatchawan! and to the Rocky Mountains! γ. On the Canadian, *Dr. James!* δ. On the Saskatchawan, *Drummond!*—This species has a more northern range even than G. biennis. The G. glabra, *Lehm.* appears to us merely a glabrous form, and G. parvifolia, *Torr.* a small-leaved state, of this species. Stems 6–12 inches high. Leaves small. Flowers rose-color turning to scarlet. Tube of the calyx much longer than the ovary. Fruit small.—Perhaps not sufficiently distinct from G. epilobioides.

7. *G. tripetala* (Cav.): stem erect, fastigiately branched above, somewhat hirsute, leafy; leaves lanceolate, the radical ones spatulate-lanceolate and on long petioles, repand or denticulate, acute, clothed with appressed pubescence; spikes slender; bracts carinate, longer than the ovaries; segments of the calyx and petals usually 3; the segments about the length of the tube, longer than the spatulate-oblong petals; stamens mostly 6; fruit closely sessile, triquetrous (rarely 4-angled), the sides 1-ribbed and plicate-rugose. *Spach.—Cav. ic.* 4. *p.* 66, *t.* 396, *f.* 1; *DC. l. c.; Spach, Onagr. p.* 56. G. hexandra, *Ortega.*

Texas, *Drummond,* fide *Spach.*—We have not seen this species, and the description given above is condensed from Mr. Spach's Monograph.

8. *G. Drummondii:* stem suffruticose at the base, a little hairy below, virgately branched above; leaves somewhat canescently puberulent, lanceolate, acute, denticulate or somewhat sinuate; spikes slender, few and loosely-flowered; bracts ovate, caducous, about the length of the ovary; tube of the calyx about the length of the segments and rather shorter than the ovary; petals spatulate-oblong; fruit sessile, very abruptly narrowed at the base and terete when mature, ovate-pyramidal above, acute, with 4 strong carinate angles.—Schizocarya Drummondii, *Spach! Onagr. p.* 62 (v. sp. in *herb. Webb.*)

Texas, *Drummond!*—There are apparently several forms of this species in Drummond's collection: the fruit does not assume its peculiar form until it is nearly mature. None of our specimens have sessile spikes, and in some other respects they do not wholly agree with Mr. Spach's detailed description.

9. *G. parviflora* (Dougl.): stem tall, erect, and, with the margin of the leaves, villous with very soft white hairs; leaves ovate-lanceolate, acute or acuminate, repand-denticulate, clothed with a very short velvety pubescence on both sides; spikes virgate, strict, very many-flowered, much elongated in fruit; bracts lanceolate-subulate; flowers very small; tube of the calyx shorter than the glabrous ovary and longer than the segments; fruit sessile, oblong-clavate, 4-nerved, slightly 4-angled (between the nerves) at the apex.—*Lehm.! in Hook. fl. Bor.-Am.* 1. *p.* 208, *& stirp. pug.* 2. *p.* 58. G. mollis, *Nutt.! ined.; Torr.! in ann. lyc. New York,* 2. *p.* 200; not of *H. B. & K.* Schizocarya micrantha, *Spach! Onagr. p.* 62.

Arkansas to the sources of the Platte, *Nuttall! Dr. James!* and on the Wallawallah, Oregon, *Douglas!* Texas, *Drummond!* and near New Orleans, *Dr. Ingalls!*—Stem somewhat branched, 2–5 feet high, clothed, besides the long hairs, with a minute slightly glandular pubescence. Leaves 1–3 inches long; those at the base of the spikes small. Spikes dense, in fruit often a foot or more long. Petals spatulate-oblong, scarcely unguiculate, shorter than the calyx-segments, rose-color. Anthers oval. Lobes of the stigma very short. Fruit 3–4 lines long, obtuse when fully grown, and with 4 inconspicuous angles at the summit, nearly terete towards the base, about 2-seeded.—In the most mature fruit we perceive no disposition to be dehiscent at the apex. This species has a considerable geographical range, and was first described from imperfect specimens.

G. mollis, H B K. is united to G. [illegible] [illegible] [illegible] kind of fruit. This and G. [illegible] [illegible] Gauridium.

9. STENOSIPHON. *Spach, monog. Onagr. p.* 64.

Tube of the calyx filiform or almost capillary, much prolonged beyond the ovary, recurved or declined after flowering, at length deciduous; the limb 4-parted, much shorter than the tube. Petals 4, unguiculate, unequal. Stamens 8, erect, the alternate ones a little shorter: filaments capillary: anthers oblong, fixed by the middle. Ovary oval, 1-celled, with 4 suspended ovules: style erect, filiform, dilated at the apex: stigma 4-lobed. Fruit (very small) coriaceous and indehiscent, ovate, convex externally, flattish within, about 8-ribbed, 1-seeded.—A tall perennial herb, with virgate branches, and scattered linear-lanceolate sessile acute nerveless entire leaves, gradually reduced to bracts. Flowers (white) sessile, crowded, in long and strict virgate spikes.

S. virgatus (Spach! l. c.)—Gaura linifolia, *Nutt.! in James' account of Long's exped.* 2. *p.* 100; *Torr.! in ann. lyc. New York*, 2. *p.* 200; *DC.! prodr.* 3. *p.* 45.
On Salt River, Arkansas, *Nuttall!* On the upper part of the Canadian, *Dr. James!* Texas, *Drummond!*—Spikes in fruit sometimes nearly a foot long. Bracts subulate, longer than the ovary, rather persistent. Calyx pubescent; the tube exceedingly slender, 4–5 lines long. Petals rather large in proportion. Ovary tomentose-pubescent.

Subtribe 4. JUSSIEÆ, *DC.*—Calyx not prolonged beyond the ovary; the limb persistent. Seeds very numerous, naked.—Leaves opposite or alternate. Petals sometimes wanting. Capsules tardily dehiscent.

10. JUSSIÆA. *Linn. gen. p.* 215; *Gærtn. fr. t.* 31; *Lam. ill. t.* 280.

Calyx-tube prismatic or cylindrical, not prolonged beyond the ovary; the lobes 4–6, persistent. Petals 4–6, spreading. Stamens twice as many as the petals. Ovary either flattish at the apex, or crowned with the conical furrowed base of the style: stigma capitate, 4–6-grooved. Capsule mostly elongated, 4–6-celled, often ribbed, opening between the ribs. Seeds very numerous.—Herbaceous or rarely slightly shrubby plants, growing in marshes. Leaves alternate, mostly entire. Flowers yellow (rarely white) axillary, often bibracteolate.

1. *J. repens* (Linn.): perennial, nearly glabrous; stem creeping at the base, ascending; leaves lanceolate-oblong or oval, mostly obtuse, tapering at the base into a slender petiole; flowers (large) on long pedicels, nodding before their expansion, with 2 small fleshy bracteoles at the base of the ovary; calyx, with the summit of the stem, slightly villous when young with viscid hairs; the lobes 5, lanceolate, acute, shorter than the obovate emarginate petals; stamens 10; capsules cylindrical, slightly attenuate at the base, much shorter than the pedicels.—*Linn. mant. p.* 381; *Swartz, obs. p.* 172; *DC. prodr.* 3. *p.* 54; *W. & Arn. prodr. Ind. Or.* 1. *p.* 335, *& in*

Hook. bot. misc. suppl. t. 40. J. Swartziana, *DC. l. c.* J. grandiflora, β. *Hook. & Arn.! in compan. to bot. mag.* 1. *p.* 25.

In ponds, Louisiana! and Arkansas! June–Aug.—Stems extensively creeping and floating; ascending branches 1–2 feet high. Leaves very smooth, veiny; the petiole about the length of the limb. Pedicels 2 inches or more in length.—This plant is certainly the same with the East Indian and S. American J. repens, to which numerous synonyms are to be referred. Some of its forms are noticed by Hooker & Arnott (*Bot. misc.* 3. *p.* 312). The petals in our plant are yellow throughout, not at the base only, as is represented in the figure cited above.

2. *J. grandiflora* (Michx.): perennial, mostly hirsute or villous; stem creeping at the base, erect; leaves lanceolate, nearly sessile, acute at each end, the lower ones spatulate-oblong; flowers (large) nodding before their expansion, on short ebracteolate or minutely bracteolate pedicels; lobes of the calyx 5, lanceolate, very acute, hairy, about half the length of the obovate emarginate petals; stamens 10; ovary about the length of the calyx-lobes, rather shorter than the pedicels.—*Michx.! fl.* 1. *p.* 267; *Bot. mag. t.* 2122; *Ell. sk.* 1. *p.* 480; *DC.! prodr.* 3. *p.* 53; *Hook. & Arn. l. c.* (excl. β.)

In bogs and ditches, S. Carolina! and Georgia! May–Aug.—Stem creeping extensively, 2–3 feet high, villous when young. Ovary 5-angled. —We have not seen the fruit, which, according to Elliott, seldom ripens in its native situations. It is naturalized in the streams around Montpelier in the south of France.

3. *J. occidentalis* (Nutt.! mss.): perennial? pubescent; stem erect, angled; leaves lanceolate, acute at each end, sessile or with short petioles; flowers (rather large) on very short mostly bracteolate pedicels; lobes of the calyx 4, ovate, acute, shorter than the obovate emarginate petals; stamens 8; capsules elongated, 4-sided, thrice the length of the pedicels.

Margin of ponds, Arkansas, *Nuttall!* Texas, *Drummond!*—We adopt Mr. Nuttall's name for this species, but it will probably prove to be already described; perhaps it is J. angustifolia, *Lam.* We have the same or a nearly allied species from the Sandwich Islands.

4. *J. leptocarpa* (Nutt.): annual, mostly hirsute; stem erect or ascending; leaves lanceolate, nearly sessile; flowers (small) on short ebracteolate pedicels; lobes of the calyx usually 6, lanceolate, acuminate, hairy, as long as the petals; stamens 10–12; capsules linear, almost cylindrical, much longer than the pedicels.—*Nutt.! gen.* 1. *p.* 279; *DC. prodr.* 3. *p.* 53; *Hook. & Arn.! in compan. to bot. mag.* 1. *p.* 25.

Missouri! to Louisiana! and Arkansas! common. Alabama, *Mr. Buckley!* Florida, *Mr. Ware! Dr. Chapman!* June–Aug.—Stem simple or sparingly branched, 1–2 feet high. Capsule about 1½ inch or more in length, straight or a little arcuate, at length almost glabrous.

5. *J. decurrens* (DC.): perennial? glabrous; stem erect, branching, winged by the decurrent leaves; branches slender; leaves lanceolate, acute, closely sessile; flowers almost sessile; lobes of the calyx 4, ovate-lanceolate, acute, about the length of the obovate petals, shorter than the capsule; stamens 8; capsules subclavate-oblong, 4-sided, with the angles slightly winged, twice or thrice the length of the pedicels.—*DC.! prodr.* 3. *p.* 56. J. erecta, *Abbott, insect. Georg. t.* 40; *Hook. & Arn. in compan. to bot. mag.* 1. *p.* 26; not of *Linn.* J. tenuifolia, *Nutt. in Sill. jour.* 5. *p.* 294? Ludwigia decurrens, *Walt.! Car. p.* 89; *Ell. sk.* 1. *p.* 217. L. jussiæoides, *Michx.! fl.* 1. *p.* 89, not of *Lam.?*

β. stem 2-3 inches high, 1–2-flowered.—L. uniflora, *Raf.?*

In swamps, &c. Virginia! and N. Carolina! to Florida! Louisiana! and Arkansas! July–Sept.—Stem about 2 feet high. Leaves mostly biglandular at the base. Pedicels with 2 cordate glands near the middle.—The depauperate variety was collected near Fayetteville, N. Carolina, by Dr. McRea.

Jussiæa subacaulis **of Pursh is Œnothera heterantha, *Nutt.***

11. LUDWIGIA. *Linn. gen. p.* 60 ; *Lam. ill. t.* 77 ; *Ell. sk.* 1. *p.* 214.

Ludwigia & Isnardia, *Linn. &c.* (also Ludwigia, *DC.*)

Calyx-tube prismatic or cylindrical, or somewhat turbinate, mostly short, not prolonged beyond the ovary; the lobes 4, mostly persistent. Petals 4, often minute or wanting. Stamens 4, opposite the lobes of the calyx. Apex of the ovary either truncate or flattish, or crowned with the pyramidal or often depressed persistent 4-lobed base of the style (stylopodium): style short: stigma capitate, often 4-furrowed or lobed. Capsule short, or rarely elongated, 4-celled, often opening by the separation or perforation of the stylopodium, at length 4-valved. Seeds very numerous.—Perennial or rarely annual herbs, growing in wet places. Leaves alternate or opposite, entire; the veinlets often confluent along the margins, so as to form an intramarginal vein. Flowers axillary, or sometimes spicate or capitate at the extremity of the stem or branches.

§ 1. *Leaves alternate, sessile: capsules short, truncate at the apex, or crowned with a depressed stylopodium.*—Euludwigia. (Isnardia, *DC.* partly).

* *Flowers large, pedicellate: petals conspicuous: stylopodium large, depressed.*

1. *L. alternifolia* (Linn.): minutely puberulent or almost glabrous; stem erect, slightly angled, branching; leaves lanceolate or oblong-lanceolate, rather acute, attenuate at the base and almost petioled; flowers axillary, solitary, pedicelled; pedicels bibracteolate above the middle; petals scarcely the length of the large ovate acuminate spreading lobes of the calyx; capsules shorter than the calyx, subglobose-cubical, with winged angles.—*Linn. spec.* 1. *p.* 118; *Lam. ill. t.* 77; *Ell. sk.* 1. *p.* 217; *Bigel.! fl. Bost. ed.* 2. *p.* 60. L. ramosissima, *Walt. Car. p.* 89. L. macrocarpa, *Michx.! fl.* 1. *p.* 89; *Torr.! fl.* 1. *p.* 180; *Bart. fl. N. Amer. t.* 14. L. salicifolia, *Poir.?* L. aurantiaca, *Raf. in med. rep.* 11. *p.* 358. L. uniflora, *Raf. l. c.?* Isnardia alternifolia, *DC.! prodr.* 3. *p.* 122. Rhexia linearifolia, *Poir.* fide *DC.*

In swamps, Canada! to Florida! and Arkansas! July–Sept.—Stem 2–3 feet high. Leaves 1–3 inches long, with distinct intramarginal veins. Pedicels 3–4 lines long. Flowers large, yellow. Calyx-lobes very large and broad, often purple or reddish within. Anthers very short. Stigma large. Capsule (as also in L. hirtella and virgata) opening first by a hole left by the falling away of the style, afterwards by the separation of the stylopodium or summit of the capsule, which at length often falls in pieces by loculicidal dehiscence.—*Bastard Loosestrife.*

2. *L. hirtella* (Raf.): hirsute; stem erect, scarcely angled; leaves (mostly short) ovate-oblong, the upper ones lanceolate or oblong-linear, closely sessile, obtuse; flowers (large) axillary, solitary, on distinct pedicels,

bibracteolate; petals scarcely longer than the ovate-lanceolate somewhat spreading lobes of the calyx; capsules villous, subglobose-cubical, with slightly winged angles, equalling or often shorter than the lobes of the calyx.—*Raf. in med. rep. New York*, 11. *p.* 358; *Ræm. & Schult. syst.* 3. *p.* 327. L. hirsuta, *Pursh, fl.* 1. *p.* 110, not of *Lam.!* L. pilosa, *Ell.! sk.* 1. *p.* 216; *Torr.! fl.* 1. *p.* 181; not of *Walt.!* L. permollis, *Bart. fl. Philad.* 1. *p.* 52. Isnardia hirsuta, *Hook. & Arn. in compan. to bot. mag.* 1. *p.* 26, not of *DC.!*

In moist places, sometimes in nearly dry sandy fields, New Jersey! to Florida! and Louisiana! June–Sept.—Stem somewhat woody at the base, 1–2 feet high, simple or sparingly branched, hirsute with long spreading hairs. Leaves rather crowded, 1–2 inches long, or often smaller, obtuse or rounded at the base and closely sessile, hirsute on both sides. Flowers mostly smaller than in L. virgata, bright yellow; the pedicels shorter than the capsule. Anthers linear-oblong.—Certainly distinct from L. virgata. We have ascertained that this species is not the L. pilosa of Walter, as was supposed, neither is it L. hirsuta of Lamarck (both these authors having described the L. mollis, *Michx.*): hence we are under the necessity of describing it under a different name.

3. *L. virgata* (Michx.): minutely puberulent; stem erect, angled above; lower leaves oval or oblong; the upper linear, mostly elongated, obtuse, closely sessile; flowers (very large) axillary, on slender pedicels, which are bibracteolate near the summit; petals larger than the ovate reflexed lobes of the calyx; capsules subglobose-cubical, with winged angles, about the length of the lobes of the calyx.—*Michx.! fl.* 1. *p.* 89! *Pursh, fl.* 1. *p.* 110; *Ell. l. c.?* Isnardia virgata, *DC.! prodr.* 3. *p.* 60.

In rather dry places, S. Carolina! to Florida! and Louisiana! May–Sept.—Stem 2–4 feet high, often with virgate branches. Lower leaves about an inch long; the upper mostly 2–3 inches long and 2–3 lines wide, with distinct intramarginal veins. Flowers few, yellow. Capsule about 4 lines broad.—The description of Elliott's L. virgata appears to be taken in part from L. hirtella.

* * *Flowers sessile, mostly small: petals often minute or wanting: stylopodium small, or none.*

4. *L. linearis* (Walt.): glabrous; stem erect, slender, sometimes branched, often stoloniferous at the base, angled above; leaves narrowly lanceolate or linear, acute at each end; flowers axillary, solitary, sessile, rarely apetalous; bracteoles very minute; lobes of the calyx triangular-ovate, much shorter than the capsule, scarcely the length of the oblong-obovate (pale yellow) petals; capsules elongated-turbinate and 4-sided.—*Walt.! Car. p.* 89; *Ell.! sk.* 1. *p.* 214. L. angustifolia, *Michx.! fl.* 1. *p.* 88. Isnardia linearis, *DC.! prodr.* 3. *p.* 60.

In swamps, Wading River, New Jersey! to Georgia! Florida! and Louisiana! July–Sept.—Stem 10–24 inches high; the stolons bearing obovate leaves. Leaves often crowded or fascicled, with minutely serrulate-scabrous margins. Style short, very thick. Capsules 3–4 lines long. Seeds oblong, very smooth.

5. *L. linifolia* (Poir.): glabrous; stem erect, slender, often branched, and stoloniferous at the base, angled above; leaves linear, rather obtuse, tapering at the base; flowers axillary, solitary, sessile; bracteoles minute; lobes of the calyx ovate-lanceolate, nearly as long as the capsule, and about the length of the petals; capsules cylindrical, slender.—*Poir.! suppl.* 5. *p.* 513.

Wilmington, N. Carolina, *Delile!* (v. sp. in *herb. Desf.*) Georgia, *Bald-*

wis! Florida, *Dr. Chapman!*—Stem 6–18 inches high, branching from the base, purplish. Flowers rather larger than in L. linearis, which it much resembles. Capsule 3–4 lines in length, of the same diameter throughout.—In the fruit this species resembles L. cylindrica, but the flowers are very different and much larger.

6. *L. cylindrica* (Ell.): glabrous; stem erect, slightly angled, much branched; leaves lanceolate, acute at both ends; flowers (very small) axillary, solitary or somewhat clustered, apetalous, sessile, minutely bibracteolate; lobes of the calyx very short; capsules cylindrical, slightly 4-grooved, abrupt at each end, rather slender.—*Ell. sk.* 1. *p.* 213. L. heterophylla, *Poir.! suppl.* 3. *p.* 512. Isnardia cylindrica, *DC.! prodr.* 3. *p.* 61. Jussiæa brachycarpa, *Lam.* fide *DC.*

β. brachycarpa: fruit shorter (the length about twice the diameter.)

S. Carolina! to Florida! and Louisiana! *β.* Florida, *Dr. Chapman!* Texas, *Drummond!* July–Sept.—Stem about 3 feet high. Leaves often obscurely denticulate, with distinct intramarginal veins. Lobes of the calyx much shorter than the ovary. Capsules 3–4 (in *β.* about 2) lines long. Seeds oblong, slightly curved, shining.

7. *L. pilosa* (Walt.): clothed with a soft pubescence; stem erect, much branched, often stoloniferous at the base; leaves lanceolate or oblong-lanceolate, mostly acute at both ends; flowers sessile, axillary and crowded at the extremity of the branches; bracteoles lanceolate-subulate, coherent with the base of the ovary; petals minute or none; lobes of the calyx triangular-ovate, acuminate, nearly the length of the villous-pubescent subglobose rather 4-sided capsule.—*Walt.! Car. p.* 89, not of *Ell. &c.* L. hirsuta, *Lam. dict.* 3. *p.* 587 (ex sp. in *herb. Desf.*), not of *Pursh, &c.* L. mollis, *Michx.! fl.* 1. *p.* 90; *Ell.! sk.* 1. *p.* 214. Isnardia mollis, *DC! prodr.* 3. *p.* 60. I. hirsuta, *DC.! l. c.*, excl. syn. *Ell.*

In swamps, S. Carolina! to Florida! and Louisiana! July–Sept.—Stem 2–3 feet high, almost villous. Leaves of the branchlets short and small; those of the stems 2–3 inches long; those of the stolons spatulate. Capsules a little longer than broad, 2–3 lines in diameter, with a broad and flat slightly 4-lobed stylopodium. Seeds oblong-oval, smooth and shining.

8. *L. alata* (Ell.): glabrous, stem erect, more or less winged by the decurrent base of the lanceolate leaves; flowers axillary, solitary, sessile, apetalous; bracteoles lanceolate, coherent with the base of the ovary; lobes of the calyx nearly the length of the capsule, broadly triangular-ovate; capsules cubical-obconic, the angles slightly winged.—*Ell. sk.* 1. *p.* 212. L. lanceolata, *Ell. l. c.* Isnardia alata, *DC. l. c.* I. microcarpa, *Hook. & Arn.! in compan. bot. mag.* 1. *p.* 26.

In swamps, S. Carolina! and Georgia! to Florida! and Louisiana! July–Sept.—Stem 1–3 feet high, sparingly branched. Leaves obscurely and remotely denticulate. Stigma elongated. Capsules small. Seeds oval.—We have specimens from the late Mr. L. Le Conte, similar, we presume, to those on which the L. lanceolata, *Ell.* was founded.

9. *L. sphærocarpa* (Ell.): minutely puberulent or nearly glabrous; stem erect, slightly angled; leaves lanceolate, acute, attenuate at the base; flowers axillary, mostly solitary, subsessile, commonly apetalous; bracteoles minute or wanting; lobes of the calyx as long as the capsule, triangular-ovate; capsules subglobose, small.—*Ell. sk.* 1. *p.* 214. Isnardia sphærocarpa, *DC.! prodr.* 3. *p.* 61.

In very wet places, near Boston, *Mr. Greene!* New Jersey! to Florida! and Louisiana! July–Sept.—Stem 2–3 feet high, at length much branched; the lower portion, when growing in water, subject to a peculiar disease of the bark, which becomes very thick and spongy. Leaves ciliate-scabrous, and often remotely and obscurely glandular-denticulate on the margins. Petals, when present, small and greenish. Capsules 1–2 lines long. Seeds oval.

10. *L. polycarpa* (Short & Peter): glabrous; stem erect, often producing stolons from the base, slightly angled, much branched; leaves narrowly lanceolate, acute, attenuate at the base; flowers axillary, sessile, solitary, or clustered, apetalous; bracteoles linear-subulate, coherent with the base of the ovary; lobes of the calyx half the length of the capsule, triangular; capsules turbinate, 4-sided.—*Short & Peter! 2nd suppl. pl. Kentucky.*

In swamps, Michigan, *Dr. Pitcher!* to Indiana, *Dr. Clapp!* Kentucky, *Mr. Griswold! Dr. Short! &c.* Aug.–Oct.—Stem 1–3 feet high. Leaves very minutely serrulate-ciliate, with distinct intramarginal veins. Bracteoles nearly the length of the capsule. Capsules very smooth, about 3 lines long, crowned with the depressed deeply 4-lobed stylopodium. Seeds oblong-oval.

11. *L. microcarpa* (Michx.): glabrous; stem procumbent at the base, often stoloniferous, ascending, often slightly winged; leaves spatulate-obovate, small, attenuate at the base; flowers minute, axillary, sessile, bibracteolate, apetalous; lobes of the calyx larger than the very small somewhat obpyramidal capsules.—*Michx.! fl.* 1. *p.* 88; *Ell.! sk.* 1. *p.* 212. L. glandulosa, *Pursh, fl.* 1. *p.* 111. Isnardia microcarpa, *Poir*, not of *DC.* I. lanceolata, *DC.! l. c.* (ex spec.)

In damp places, S. Carolina! to Florida! July–Sept.—Stem slender, 8–12 inches high, seldom branched, probably perennial. Leaves often obscurely denticulate. Stigma sessile. Seeds obovate, reddish-brown, shining, very minutely striate.

12. *L. capitata* (Michx.): glabrous; stem slender, erect, somewhat angled, often stoloniferous at the base; leaves narrowly lanceolate, obtuse at the base and closely sessile, acute; the upper ones lanceolate-linear; flowers crowded in a terminal head or spike, sessile; bracteoles lanceolate, as long as the ovary; petals very small, or none; lobes of the calyx rather shorter than the capsule, broadly triangular-ovate; capsules quadrangular and somewhat turbinate.—*Michx.! fl.* 1. *p.* 90; *Ell.! sk.* 1. *p.* 214. L. suffruticosa, *Walt. Car. p.* 90. Isnardia capitata, *DC.! prodr.* 2. *p.* 60.

β. pubens: pubescent; spikes loose; the bracts longer than the turbinate capsules.

In wet places, S. Carolina! to Florida! *β.* Georgia? *Herb. Baldwin!* Aug.–Oct.—Stem simple or virgately branched. Cauline leaves with distinct intramarginal veins; the upper ones narrow and mostly elongated, very acute: those of the stolons obovate, tapering into a short petiole. Seeds obovate. This species very rarely bears petals.

§ 2. *Leaves opposite, mostly petioled: flowers sessile: petals very small or mostly none: capsule short, the apex truncate.*—Isnardia, *Linn.*

13. *L. palustris* (Ell.): glabrous and slightly succulent; stems procumbent and rooting or floating at the base; leaves opposite, ovate-spatulate, tapering into a slender petiole; flowers axillary, sessile, apetalous, or sometimes with small reddish petals; lobes of the calyx very short; capsules oblong, 4-sided, short, not attenuate at the base.—*Ell. sk.* 1. *p.* 214.—L. apetala, *Walt. Car. p.* 89. L. nitida, *Michx.! fl.* 1. *p.* 87. Isnardia palustris, *Linn.*; *Hook. in Engl. bot. suppl. t.* 2593, *& fl. Bor.-Am.* 1. *p.* 215; *Torr.!*

fl. 1. *p.* 182. I. palustris *β.* Americana, *DC.! l. c.* I. ascendens, *Hall, in Eaton's man, ed.* 8.

In ditches and small streams, Canada! (from the Saskatchawan!) and throughout the Northern States! to Florida, Louisiana, and Oregon! June–Nov.—Stems purplish, apparently perennial. Flowers very small. Capsules small. Style almost none. Seeds buff-color, oblong, slightly angled, shining.

14. *L. natans* (Ell.): glabrous, somewhat fleshy; stems creeping or sometimes floating; leaves opposite, ovate-spatulate or oblong, tapering into a petiole, the lowermost sometimes almost sessile; flowers axillary, sessile; petals (yellow, *Ell.*) as long as the ovate-triangular acute lobes of the calyx, sometimes none; ovary bibracteolate; capsules 4-sided, tapering towards the base.—*Ell. sk.* 1. *p.* 581.

In streams or swamps, S. Carolina, *Elliott!* Florida, *Dr. Chapman!* Louisiana, *Dr. Hale!* July–Oct.—Differs from the preceding in its larger flowers; the fruit twice or thrice the size, usually with 2 conspicuous bracts, and attenuate from the middle to the base, when young turbinate, at length quadrangular.

15. *L. spathulata:* finely pubescent throughout, not shining or succulent; stem branching from the base, ascending; leaves opposite, oval, tapering into a margined petiole; flowers axillary, sessile, apetalous; lobes of the calyx very short; capsules (small) somewhat ovoid, obscurely 4-sided, pubescent.

Middle Florida, *Dr. Chapman!*—Stem 8–12 inches high, slender, diffusely branched from the base, apparently annual. Leaves about an inch in length, the margined petiole about the length of the limb, clothed, like the stems, with a fine appressed slightly hoary pubescence. Flowers very small. Style very short. Seeds fuscous, shining, minutely striate with dark brown lines.

§ 3. *Leaves opposite, sessile: flowers on filiform peduncles: petals conspicuous: capsule clavate-turbinate, the apex crowned with a short conical stylopodium.*—Ludwigiantha.

16. *L. arcuata* (Walt.): glabrous or nearly so; stem creeping; leaves opposite, oblanceolate, sessile; flowers solitary, on long filiform axillary peduncles; petals obovate (bright yellow), exceeding the linear-lanceolate acuminate spreading lobes of the calyx; capsules clavate-oblong, at length arcuate, about the length of the persistent lobes of the calyx.—*Walt. Car. p.* 89. L. pedunculosa, *Michx.! fl.* 1. *p.* 88; *Pursh, fl.* 1. *p.* 111; *Ell.! sk.* 1. *p.* 215. Isnardia pedunculosa, *DC.! prodr.* 3. *p.* 60.

In bogs and swamps, near the coast, Virginia to Georgia! and Florida! May–July.—Stem 3–10 inches long, rooting at each pair of leaves, sometimes branched. Peduncles twice or thrice the length of the leaves, with a pair of setaceous bracteoles near the summit. Flowers large for the size of the plant.—The leaves are marked with translucent linear dots, which are also more or less apparent in most species of this genus, as well as in many of Œnothera and Epilobium.

L. glandulosa and *L. rudis* of Walter cannot be determined by the description given by that author, and no specimens exist in his herbarium.

L. tuberosa of Rafinesque (*ann. nat. p.* 15.) appears to be either L. virgata or L. alternifolia.

TRIBE II. CIRCÆEÆ. *DC.*

Flowers regular and symmetrical, with a binary arrangement, viz: Lobes of the calyx, petals, and stamens 2. Capsule 2-celled, 2-valved. Seed solitary in each cell, erect.—Leaves opposite, petioled.

Lopezia, with Semeiandra and Diplandra, *Hook. & Arn.*, and perhaps Hauya, will doubtless form a distinct tribe.

12. CIRCÆA. *Tourn.; Lam. ill. t.* 16; *Gærtn. fr. t.* 24.

Tube of the calyx slightly produced beyond the ovary; the free portion nearly filled with a cup-shaped disk, deciduous; the limb 2-parted. Petals 2, obcordate. Stamens 2, alternate with the petals: filaments filiform: anthers short. Style filiform: stigma somewhat capitate, emarginate. Capsule obovate, 2-celled, at length 2-valved, with a single erect seed in each cell, hispid with hooked hairs.—Perennial herbs, with opposite petioled membranaceous leaves. Flowers small (white or pale rose-color), in terminal and lateral racemes.—*Enchanter's Nightshade.*

1. *C. Lutetiana* (Linn.): stem mostly pubescent; leaves ovate, somewhat cordate, acuminate, slightly repand-toothed, usually longer than the petiole; bracts none; disk projecting beyond the tube of the calyx.—*Linn.! spec.* 1. *p.* 8 (*β.* Canadensis); *Michx.! fl.* 1. *p.* 17; *Torr.! fl.* 1. *p.* 29. C. Canadensis, *Muhl.*

Moist rich woodlands, Canada! to the mountainous portions of the Southern States. July.—Stem branching, swollen at the nodes, 1–2 feet high. Petals reddish-white. Fruit reflexed. Leaves marked with minute linear dots (under a lens), as in numerous plants of the family.

2. *C. alpina* (Linn.): glabrous; stem weak; leaves cordate, shining, rather coarsely toothed, as long as the petioles; pedicels subtended by minute setaceous bracts; disk scarcely or not at all projecting beyond the tube of the calyx; fruit pubescent but scarcely hispid.—*Linn.! l. c.; Engl. bot. t.* 1057; *Michx.! l. c.; Torr.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 215.

Damp close woods on decayed trunks with mosses, Canada (from the Saskatchawan!) and Northern States! west to Oregon! July.—Stems commonly 3–8 inches high. Flowers and fruit smaller.—The characters by which we chiefly distinguish these two species appear to be constant, except the toothing of the leaves and the length of the petioles, which are not greatly to be depended on. All the specimens of C. intermedia that we have examined seem to us referible to C. Lutetiana.

Pleurandra, *Raf. fl. Ludoviciana* (afterwards changed to Pleurostemon), and Onosuris of the same author (which is not Camissonia, *Link*) were characterized from the popular descriptions in Robins' Travels in Louisiana, while the plants themselves appear never to have been seen by any botanist whatever.

SUBORDER HALORAGEÆ. *R. Br.*; *DC.* (excl. Callitriche.)

Limb of the calyx 3–4-lobed or entire. Petals 3–4, small, or sometimes wanting. Stamens as many or twice as many as the lobes of the

calyx, or sometimes fewer, inserted with the petals into the summit of the calyx. Ovary coherent with the calyx, 1–4-celled, with a solitary pendulous ovule in each cell: style none: stigmas equal in number with the cells of the ovary, papillose or penicillate, distinct. Fruit dry and indehiscent, membranous or bony, 1–4-celled. Seed anatropous, with a thin fleshy albumen. Embryo straight: radicle long and tapering: cotyledons minute.—Herbs or suffruticose plants, growing in water or wet places. Leaves alternate, opposite, or verticillate. Flowers very small, axillary, sessile, occasionally monœcious or diœcious.

13. PROSERPINACA. *Linn.; Lam. ill. t.* 50; *Juss. in ann. mus.* 3. *p.* 320, *t.* 30, *f.* 1.

Tube of the calyx 3-sided; the limb 3-parted. Petals none. Stamens 3. Stigmas oblong, papillose. Fruit bony, triquetrous, 3-celled.—Perennial aquatic herbs; the stems creeping at the base. Leaves alternate, serrate or pectinately parted. Flowers axillary (perfect), solitary or 3–4 together. Parts of the flower rarely quaternary.

1. *P. palustris* (Linn.): leaves lanceolate or linear, sharply serrate; the lowermost (when submersed) pectinately incised or pinnatifid; fruit acutely triquetrous.—*Linn.! act. Ups.* 1741, *p.* 81; *Michx.! fl.* 1. *p.* 76; *Ell. sk.* 1. *p.* 181; *Torr.! fl.* 1. *p.* 161; *DC.! prodr.* 3. *p.* 67. Trixis palustris, *Gærtn. fruct.* 1. *p.* 115, *t.* 24.

Swamps, ponds, and ditches (Canada, *Pursh*), Vermont! and Massachusetts! to Florida! and Arkansas! June–Aug.—Stems 6–20 inches in length. Stigmas (purplish) cylindrical, obtuse.

2. *P. pectinacea* (Lam.): leaves all pectinate; the segments linear-subulate; angles of the fruit rather obtuse.—*Lam. ill. t.* 50, *f.* 1; *Pursh, fl.* 1. *p.* 92; *Ell. l. c.*; *Torr.! fl.* 1. *p.* 162; *DC.! l. c.* P. palustris β. *Michx.! l. c.*

Sandy swamps, Plymouth, Massachusetts, *Mr. Oakes! Mr. Tuckerman!* New Bedford, *Mr. T. A. Greene!* and New Jersey! to Florida! August. (May in the Southern States.)—Stigmas attenuate above. Plant smaller than the preceding species; the fruit smaller, rather than larger as stated by Elliott and De Candolle. The latter author has inadvertently described the leaves as opposite in the character of the genus.

14. MYRIOPHYLLUM. *Vaill.; Linn.; Gærtn. fr. t.* 68; *Lam. ill. t.* 775; *DC. prodr.* 3. *p.* 68.

Flowers monœcious or frequently perfect. Calyx 4-parted in the sterile flowers, 4-toothed in the pistillate and perfect flowers. Petals 4, frequently inconspicuous or wanting. Stamens 4 or 8, rarely 6? Ovary 4-celled: stigmas oblong or linear, often compressed, penicillate or papillose along the inner surface, recurved. Fruit of 4 nut-like indehiscent carpels, cohering by their inner angles, and enclosed in the adherent tube of the calyx, apiculate with the base of the stigmas.—Aquatic usually submersed perennial plants, the upper part emersed while flowering. Leaves verticillate, sometimes opposite or alternate; the submersed ones pinnately parted, with capillary or filiform segments. Flowers sessile in the axils of the upper leaves (which are often reduced to bracts), bibracteolate; the uppermost usually staminate, the lower fertile, and the intermediate often perfect. The staminate flowers usually bear abortive pistils, and the pistillate often produce sterile stamens.

§ 1. *Flowers octandrous: petals caducous: carpels not ridged on the back: leaves verticillate.*—Spondylophyllum.

1. *M. spicatum* (Linn.): leaves ternately or 6 verticillate, all pinnately parted with capillary segments; floral leaves (bracts) shorter than the flowers, ovate, entire, the lowermost larger and serrate; petals broadly ovate; carpels smooth and even.—*Linn.! spec.* 2. *p.* 992; *Michx.! fl.* 2. *p.* 190; *Fl. Dan. t.* 981; *Engl. bot. t.* 83; *DC.! prodr.* 3. *p.* 68; *Hook.! fl. Bor.-Am.* 1. *p.* 216.

Deep ponds, Canada! (from Bear Lake, *Richardson*) and Northern States! to Arkansas! July–Aug.—Stem very long and slender, branching. Floral leaves inconspicuous, whence the inflorescence appears as a terminal interrupted leafless spike. Bracteoles triangular-ovate, about half the length of the bract. Lobes of the calyx somewhat obtuse. Anthers oblong. Stigmas short, pubescent along the inner side.—*Water-Milfoil* (*Mille-feuille.*)

2. *M. verticillatum* (Linn.): leaves ternately or 4 verticillate, the lower ones pinnately parted with capillary or setaceous segments; floral leaves pectinate-pinnatifid, commonly much longer than the flowers; petals oblong-obovate; carpels smooth and even.—*Linn.! l. c.*; *Michx.! fl.* 2. *p.* 190; *Engl. bot. t.* 218; *Ell. sk.* 2. *p.* 588; *DC. l. c.*

In ponds and streams, Canada! to Florida? and Texas! Oregon, *Nuttall!* July–Sept.—Stem stouter than in M. spicatum. Bracteoles minute. Lobes of the calyx nearly lanceolate, acute, minutely serrulate. Anthers oblong. Stigmas linear-oblong, at length woolly.—*Water-Milfoil.*

§ 2. *Flowers tetrandrous* (*or hexandrous, according to* Michaux *and* Elliott): *petals somewhat persistent: carpels* 1–2-*ridged on the back: leaves verticillate.*—Spondylastrum.

3. *M. heterophyllum* (Michx.): stem thick; leaves mostly quinately verticillate, the lower ones pinnately parted with attenuated capillary segments; floral leaves ovate or lanceolate (thick), sharply serrate, crowded; petals oblong; carpels minutely roughened, slightly 2-ridged and tuberculate on the back.—*Michx.! fl.* 2. *p.* 191; *Pursh, fl.* 1. *p.* 274; *Ell. sk.* 2. *p.* 588; *DC.! prodr.* 3. *p.* 69. Potamogeton verticillatum, *Walt. Car. p.* 90?

In ponds and slow-flowing streams, Canada (near the Falls of Niagara!) and New York! to Florida! Louisiana! Arkansas! and Texas! June–Sept.—Stem branching, often more than one-fourth of an inch in diameter towards the base. Submersed leaves rather small; the floral ones sometimes scattered, varying from ovate to linear-lanceolate; the lowest pectinate-pinnatifid. Bracteoles about the length of the petals, serrulate. Lobes of the calyx minute, acute or acuminate. Petals at length somewhat scarious and involute. Stamens (6, *Michaux*) 4 in all our specimens: anthers linear. Carpels cohering at the axis merely.

4. *M. scabratum* (Michx.): stem rather slender; leaves quaternately and

quinately verticillate, or often somewhat scattered; the lower ones pinnately parted, with few and very slender capillary segments; floral leaves linear, pectinately toothed or pinnatifid-serrate; petals oblong; carpels strongly 2-ridged on the back, the ridges tuberculate.—*Michx.! fl.* 2. *p.* 190; *Ell. l. c.*; *DC. prodr.* 3. *p.* 69. Potamogeton pinnatum, *Walt.! Car. p.* 56.

In shallow ponds &c. throughout the Southern and Western States! April–July.—Stems 6–12 inches high. Bracteoles ovate, serrulate. Lobes of the calyx very small, triangular-lanceolate. Petals mostly mucronate. Stamens 4 (6, *Elliott*): anthers oblong. Stigmas linear, beset with long purple hairs. Carpels cohering at the axis; the tuberculate ridges prominent in the mature fruit, the re-entering angles well defined; the sides smooth and even, or minutely scabrous.

5. *M. hippuroides* (Nutt.! mss.): leaves quaternately verticillate; the lower ones pinnately parted, with capillary segments; floral leaves linear, remotely denticulate or serrate; petals obovate; carpels nearly even, slightly 2-ridged on the back.—M. scabratum, *Cham. & Schlecht. in Linnæa*, 4. *p.* 506.

Oregon, in ponds of the Wahlamet, *Nuttall!* California, near St. Francisco, *Chamisso* (without fruit).—Appears nearly to resemble the preceding; but the fruit is very different.

§ 3. *Flowers tetrandrous: petals somewhat persistent: carpels not ridged on the back: leaves alternate, or almost wanting: terrestrial or aquatic.*—Ptilophyllum, *Nutt.* (Purshia, *Raf.* Hylas, *Bigelow.*)

6. *M. ambiguum* (Nutt.): submersed leaves pinnately parted into (about 10) much attenuated capillary segments; the scarcely emersed ones pectinate; the upper floral ones linear, tapering into a short petiole, sparingly incised or toothed, sometimes entire; flowers mostly perfect; petals oblong; carpels smooth and even (minute), slightly coherent.

α. natans: stems floating; emersed leaves as in var. *γ.*; the floating ones capillary.—*DC.! prodr.* 3. *p.* 70. M. (Ptilophyllum) ambiguum, *Nutt.! gen.* 2. *p.* 212.

β. capillaceum: leaves all immersed and capillary.—M. capillaceum, *Torr.! compend.*

γ. limosum (Nutt.): small; stems procumbent and rooting; leaves all linear (rigid), sparingly toothed or lobed, often entire.—*Nutt.! l. c.*; *DC. l. c.* M. procumbens, *Bigel. fl. Bost. ed.* 2. *p.* 346. Purshia humilis, *Raf. in New York, med. rep.* 2. *p.* 361, fide *icon. ined.* Hylas pinnatus, *Bigel. ined.* fide *Hook.*

In ponds and ditches (*α.* & *β.*) and in wet miry places (*γ.*) Massachusetts! and Long Island, New York! to New Jersey! and Pennsylvania! July–Aug.—Stems much branched (in *γ.* 2–6 inches long): the leaves scattered. Flowers minute. Petals (calyx, *Nutt.*) persistent, purplish. Anthers oblong. Stigmas penicillate.—Varies greatly in appearance, according to the situation in which it grows.

7. *M. tenellum* (Bigel.): stems (scapes) almost leafless, simple, arising from a prostrate rhizoma; floral leaves or bracts minute, entire; flowers (6–15; monœcious) alternate; petals linear-oblong; carpels smooth and even. —*Bigel.! fl. Bost. ed.* 2. *p.* 346; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 216. M. nudum, *La Pylaie! ined.* Hylas aphyllus, *Bigel. ined.*

Borders of ponds, Newfoundland, *La Pylaie!* New England States! and Northern part of New York! July.—Scapes slender, 4–10 inches high, with numerous scale-like rudiments of leaves, often 4–6 from the same slender rhizoma, of which several are infertile. Floral leaves a little longer than the purplish flowers. Anthers oblong. Stigmas penicillate.—We have beautiful specimens from Mr. Oakes and Mr. Tuckerman, but the ripe fruit is wanting.

15. HIPPURIS. *Linn.; Gærtn. fr. t.* 84*; Juss. in ann. mus.* 3, *t.* 30, *f.* 3.

Calyx with a minute entire limb. Petals none. Stamen 1, inserted on the margin of the calyx. Style filiform, stigmatic the whole length, received into a groove of the stamen. Fruit cartilaginous, 1-celled, 1-seeded. Seed pendulous.—Aquatic perennial herbs, with simple stems, verticillate entire leaves, and axillary minute flowers, which are often polygamous.—*Horse-tail.*

1. *H. vulgaris* (Linn.): leaves in whorls of 8–12, linear, acute, sphacelate at the apex. *Hook.*—*Linn. spec.* 1. *p.* 4; *Engl. bot. t.* 763; *Michx.! fl.* 1. *p.* 1; *Torr.! fl.* 1. *p.* 2; *Hook.! fl. Bor.-Am.* 1. *p.* 217.

β. lower leaves much longer, membranaceous, not sphacelate at the apex. *Hook. l. c.*

In ponds and borders of lakes, Labrador! Greenland, and Subarctic America! Sitcha and N. W. Coast, to New York! and Pennsylvania?—Stem a foot or more high.—This plant is very uncommon in the United States, and is only found in the more northern portions. The plant so called in the late Mr. Drummond's collection, from Quaker Bridge, New Jersey (*Compan. to bot. mag.* 1. *p.* 46), which it was thought might prove a distinct species, is Sclerolepis verticillata (Sparganophorus, *Michx.*), without flowers, in which case it often much resembles Hippuris. Calif.

2. *H. maritima* (Hellen.): leaves 4–6 in a whorl, lanceolate, obtuse, not sphacelate at the apex. *Hook.*—*Hellenius, diss. Hipp.* (1786); *Fl. Dan. t.* 1261; *Reichenb. ic. bot. t.* 86, *f.* 182; *DC. l. c.*; *Hook. l. c.* H. tetraphylla, *Linn. f. suppl. p.* 81; *Richards. appx. Frankl. journ. ed.* 2. *p.* 2.

Subarctic America from Labrador to Kotzebue's Sound.—Probably too near H. vulgaris.

3. *H. montana* (Ledeb.): very small and slender; leaves about 6 in a whorl, linear, acute.—*Ledeb. in Reichenb. l. c. f.* 181; *Cham. & Schlecht. in Linnæa,* 4. *p.* 507; *DC. l. c.*

Turfy places, Unalaschka, *Eschscholtz! Chamisso.*—The plant has quite the habit of a small Galium.

ORDER LVII. LOASACEÆ. *Juss.*

Sepals united into an equally 5-lobed calyx, persistent. Petals 5, sometimes 10, the inner series (transformed stamens?) mostly dissimilar or smaller, inserted in the throat of the calyx. Stamens numerous, rarely few or definite, inserted with the petals; a portion of the outer filaments often dilated or petaloid and mostly sterile; the others commonly disposed in fascicles opposite the petals and slightly united: anthers innate or adnate. Ovary coherent with the tube of the calyx, 1-celled, with mostly 3 parietal placentæ, "or with 1 free central lobed one" (*Lindl.*): ovules numerous, or some-

times few, rarely solitary : styles usually united into one. Fruit mostly capsular or succulent, crowned with the limb of the calyx. Seeds anatropous, either numerous, few, or rarely solitary, not arillate, usually with more or less fleshy albumen. Cotyledons flat or plano-convex.—Herbs (all American), sometimes climbing or twining, mostly armed with bristly stinging hairs, which secrete an acrid juice, and rough with a barbed pubescence. Leaves alternate or opposite, lobed or toothed, without stipules. Flowers commonly large and showy, mostly yellow.

1. MENTZELIA. (*Plumier?*) *Linn.*; *Lam. ill. t.* 425. *Juss. in ann. mus.* 5. *p.* 24.

Mentzelia & Bartonia, *Nutt.*, *Pursh*, *&c.*—Acrolasia, *Presl.*

Tube of the calyx cylindrical or clavate; the limb 5-parted. Petals 5, or sometimes 10, plane, spreading or erect-spreading, mostly somewhat unguiculate: æstivation convolute. Stamens indefinite (30–200 or more), or rarely 10–20; five or more of the exterior filaments often dilated, or petaloid and sterile, the others filiform and often in 5 or more phalanges: anthers oval, innate. Ovary coherent with the tube of the calyx, with 3 (rarely more?) parietal placentæ: ovules numerous or reduced to a single one on each placenta: styles 3, filiform, connate so as to appear simple and often spirally twisted, but usually divisible to the middle: stigmas simple, minute. Capsule crowned with the lobes of the calyx, 1-celled, 3- (or more?) valved at the summit, 3–many-seeded. Albumen thin or almost none: cotyledons broad and flat.—Branching herbs, more or less rough and tenacious with rigid barbed hairs. Leaves alternate, coarsely-toothed or sinuate-pinnatifid. Flowers mostly sessile, 1–3 together, golden yellow, or rarely whitish.

We are constrained to adopt the suggestion of Hooker & Arnott (*Bot. Beechey, suppl. p.* 343; see also *Hook. fl. Bor.-Am.* 1. *p.* 222,) and to refer Bartonia, *Nutt.* as well as Acrolasia, *Presl.* to Mentzelia. In his manuscript notes recently communicated to us, Mr. Nuttall establishes the genus Trachyphytum, to include Bartonia albicaulis, *Hook.* and other species which have no inner series of petals or dilated filaments, and 20 or more cubical seeds arranged in a single series on each placenta; while his Bartonia is distinguished by its double rows of compressed or winged seeds, and by having a portion of the filaments dilated or changed into petals. But Trachyphytum, of which some species have wholly the habit of the large-flowered Bartonias, is only distinguished from Mentzelia by the rather more numerous seeds; and Bartonia micrantha, *Hook. & Arn.*, which has 5 petaloid filaments, has a 3-seeded capsule. Could the Bartonia of Nuttall be retained as a genus, we fear that the name would require to be changed; as the Bartonia of Muhlenberg and Willdenow (1801) is much older, and was published two years before Centaurella, *Michx.* (1803)

§ 1. *Seeds* 3–9, *often minutely striate: filaments all nearly equal and filiform, or* 10 *of them longer and more or less dilated: flowers expanding in direct sunshine.*—EUMENTZELIA.

1. *M. oligosperma* (Nutt.): "rough with multibarbe hairs, dichotomous: leaves lanceolate-ovate, often acuminate, on very short petioles, cuneate at the base, incisely toothed or somewhat lobed; petals cuneate-oblong, cuspidate, entire, a little longer than the [20 or more] stamens; capsule very narrow, about 3-seeded; seeds [finely striate with sinuous lines] linear-oblong." *Nutt.! in bot. mag. t.* 1760; *DC.! prodr.* 3. *p.* 343. M. aurea, *Nutt.! gen.* 1. *p.* 300; *Torr.! in ann. lyc. New York*, 2. *p.* 199.

In rocky places, Missouri! Arkansas! and Texas! to the Rocky Mountains. May–July.—♃ Root tuberous and succulent. Flowers deep golden-yellow, 8–10 lines in diameter, expanding in sunshine, evanescent. Seeds at length triangular, elongated.—Five or more of the filaments are usually slightly dilated.

2. *M. rhombifolia* (Nutt.! mss.): "somewhat rough with multibarbe hairs, dichotomous; leaves rhombic-ovate, mostly obtuse, almost sessile, repandly-crenate and angular; petals cuneate-oblong, somewhat pointed; capsule narrow, about 3-seeded; seeds angular, oblong.

Plains of Red River, Arkansas.—♃ Nearly allied to the preceding, but with very different foliage, the leaves being nearly as broad as long, clothed with short appressed hairs, and with few and slight denticulations." *Nuttall.* —We have not seen the flowers.

3. *M. Floridana* (Nutt. mss.): slightly roughened, the hairs mostly multibarbe, dichotomous; leaves deltoid-ovate, acute, unequally toothed, truncate and 2-lobed at the base, distinctly petioled; petals cuneate-oval, obtuse, a little longer than the (about 30) stamens; capsules clavate, about 6-seeded; seeds oval, flattish, abruptly narrowed towards the base, minutely striate.

East Florida, *Dr. Baldwin* and *Mr. T. Peale*, fide *Nuttall.* Tampa Bay, *Dr. Leavenworth!*—♃ Leaves slightly scabrous. Flowers rather small, golden-yellow. Capsules hispid with multibarbe hairs. Seed conformed to the shape of the embryo, with scarcely any albumen. Cotyledons broad and flat, longer than the radicle. The petals, according to Nuttall, are obtuse, with a small blunt point.—Apparently nearly allied to M. hispida.

§ 2. *Seeds* 20 *or more, in a single series on each placenta, minutely tuberculate-scabrous, somewhat cubical: filaments all filiform: petals* 5, *expanding in direct sunshine: root annual.*—TRACHYPHYTUM, Nutt. mss.

4. *M. Lindleyi*: muricate-hispid; leaves ovate-lanceolate, sessile or slightly clasping, deeply pinnatifid; the lobes lanceolate or linear, often toothed, the terminal one prolonged and mostly acute; bracteoles at the base of the calyx pinnatifid; flowers (large) solitary or 2–3 together at the extremity of the branches; petals obovate, pointed with a short acumination, twice the length of the lanceolate acute or acuminate calyx-segments; filaments very numerous, all filiform; capsules hirsute, elongated, somewhat thickened upwards; seeds numerous.—Bartonia aurea, *Lindl.! bot. reg. t.* 1831; *Hook.! bot. mag. t.* 3649.

California, *Douglas!*—Stem 2–3 feet high, branched. Petals 1–1½ inch in length, deep golden yellow, expanding in bright sunshine. Capsules 1–2 inches long, arcuate-recurved.—The pubescence consists of hispid hairs, bulbous at the base, and minutely denticulate; with much smaller very minutely retrorsely barbate hairs intermixed.—In referring this species to the genus Mentzelia, we are unwillingly obliged to change the specific name, to prevent confusion between it and the Mentzelia aurea of Nuttall's Genera. We therefore propose that it bear the name of the justly celebrated botanist who first described it.

5. *M. gracilenta:* stem pubescent; leaves lanceolate-linear, sessile, muricate-scabrous, pinnatifid, the lobes short, obtuse, mostly entire; bracteoles at the base of the calyx pinnatifid; flowers clustered at the summit of the stem; petals cuneiform-obovate, obtuse or retuse, more than twice the length of the ovate-lanceolate calyx-segments; filaments numerous (40 or more), filiform-subulate; ovary obconic; ovules 20 or more.

California, *Douglas!*—Since this plant is not noticed in Hooker & Arnott's account of Douglas's collection, we are led to doubt whether it may not be considered a slender variety of the preceding species; but it is much smaller; the flowers not half the size; the petals not at all pointed; and the outline of the leaves different. The filaments are dilated and somewhat united at the base.

6. *M. albicaulis* (Dougl. mss.): low, branching from the base; stem white and polished and nearly glabrous below; leaves lanceolate, remote, deeply sinuate-pinnatifid, sessile, scabrous; flowers (small) solitary or mostly in loose clusters, not bracteolate; petals obovate, scarcely exceeding the short subulate-lanceolate calyx-segments; filaments (20–30) all subulate-filiform; capsules cylindrical, narrow, elongated; seeds 20–40.—Bartonia albicaulis, *Hook.! fl. Bor.-Am.* 1. *p.* 222. Trachyphytum albicaulis & T. gracile! *Nutt. mss.*

Arid sandy plains of the Oregon, under the shade of Purshia tridentata, *Douglas*. Plains of the Oregon and Rocky Mountains, *Nuttall!* June.—Stem 6–10 inches high. Petals about 2 lines in length, yellow.—The pubescence, although less in degree, is of two kinds, like that of M. Lindleyi, &c.

7. *M. congesta* (Nutt.! mss. under Trachyphytum): "stem dichotomous, smooth; leaves short, ovate, somewhat pinnatifid or incisely toothed, the upper ones clasping, bracts membranaceous, toothed, as long as the clusters of (small) flowers; capsules clavate-oblong, about 20-seeded.

"Rocky Mountains, on Lewis River, rare.—Flowers in sessile clusters, 3–5 together, enveloped by the membranaceous bracts. Calyx-segments linear-lanceolate, acuminate. Petals 5, small, yellow." *Nuttall.*—Our specimen is in fruit only. The stem is white and polished: the pubescence as in M. Lindleyi, &c. Besides the sheathing floral leaf, there is a pair of smaller bracteoles at the base of the calyx.

§ 3. *Seeds numerous, in a double series, compressed or winged, five or more of the exterior filaments dilated, often sterile and petaloid; petals* 5–10; *the inner series* (*transformed stamens?*) *usually smaller: root mostly biennial.*—BARTONIA, Nutt. *not of* Willd.

* *Flowers vespertine, yellowish-white.*

8. *M. ornata:* rough with short barbed hairs; leaves oblong-lanceolate, sessile, interruptedly sinuate-pinnatifid; the segments rather acute; flowers (very large) terminating the branches, bracteolate; petals 10, lanceolate-ovate, concave and spreading, unguiculate, acute, the 5 inner ones somewhat smaller, twice the length of the lanceolate calyx-segments; filaments very numerous, all filiform; capsules 5–7-valved at the summit; seeds numerous, on 5–7 placentæ, compressed, scarcely margined. (Character arranged from *Nutt. gen.*)—Bartonia ornata, *Nutt. gen.* 1. *p.* 297; *Pursh, fl.* 1. *p.* 326; *Bart. fl. N. Amer. t.* 81; *DC. prodr.* 3. *p.* 339. B. decapetala, *Sims, bot. mag. t.* 1487.

On the Missouri in argillaceous soil, *Lewis, Nuttall.* Aug.–Oct.—Root succulent, fusiform. Stem 2–4 feet high, much branched. Flowers odorous, vespertine: the petals about 2 inches long. Stamens 200–300.

9. *M. nuda:* rough with a minute barbed pubescence; leaves somewhat lanceolate, interruptedly pinnatifid, the segments obtuse; flowers (large) terminating the branches, not bracteolate; petals 10; stamens very numerous; the exterior filaments petaloid and often sterile, the others filiform; capsules 3-valved at the summit; seeds numerous, winged.—Bartonia nuda, *Nutt. l. c.; Pursh, fl.* 1. *p.* 328, *&* 2. *p.* 749; *DC. l. c.*

Gravelly hills of the Missouri, near the Great Bend, *Nuttall, Dr. James!* July–Aug.—We have drawn up the character of this, as well as of the preceding species, wholly from the excellent and complete description of Nuttall, as we possess only an imperfect specimen collected by Dr. James. The flowers are about half the size of those of M. ornata; and the root, Mr. Nuttall thinks, is triennial or perhaps perennial.

* * *Flowers expanding only in bright sunshine, deep yellow.*

10. *M. lævicaulis:* stem whitish, smooth and somewhat shining when old; leaves lanceolate, sinuate-pinnatifid, sessile, somewhat canescent and scabrous with minute multibarbate hairs; flowers (very large and showy) terminating the branches, often rather crowded; bracteoles none, or subulate; petals 5, or rarely 10, erect-spreading, lanceolate, acute at each end, twice the length of the lanceolate-acuminate calyx-segments; stamens very numerous; the 5 exterior filaments dilated and somewhat petaloid, but antheriferous; the others filiform; seeds numerous, winged.—Bartonia lævicaulis, *Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 221, *t.* 69; *Hook. & Arn.! bot. Beechey, suppl. p.* 343.

On the Oregon, *Douglas! Nuttall!* California, *Douglas!* June–July.—Flowers bright yellow, opening in sunshine; the petals fully 2 inches in length. The minute tenacious pubescence consists of short and stout bristles, barbed with recurved verticillate spines along their whole length, as in M. oligosperma; with slender and pungent hairs intermixed, which are very minutely denticulate, with the spines pointed upwards.

11. *M. pumila* (Nutt.! mss. under Bartonia): "rough with a minute barbed pubescence; stem low and rather stout, whitish, branching towards the summit; leaves lanceolate, sinuate-toothed or pinnatifid, the lower ones somewhat petioled, the uppermost sessile; flowers (small) solitary or 3 together, terminating the loose flowering branches, slightly pedicellate, with 1–2 linear-setaceous bracts at the base; petals 10, lanceolate, acute, spreading, longer than the lanceolate-subulate calyx-segments; the inner ones smaller; stamens very numerous; the outer filaments flat and somewhat dilated; capsules clavate-cylindrical; seeds numerous, winged."—

"Bare hills on the banks of Ham's Fork of the Colorado of the West, Oregon. July.—Plant 8–10 inches high. Root fusiform, fleshy. Capsules 3-valved." *Nuttall.*—The flowers are rather larger than those of M. oligosperma, yellow.

12. *M. micrantha* (Hook. & Arn. under Bartonia): hispid throughout with short hairs; stem erect, dichotomous, whitish; leaves ovate, acuminate, cuneate at the base, sessile, sinuate-pinnatifid; flowers glomerate, shorter than the floral leaf, ebracteolate; petals 5, ovate, exceeding the calyx-segments; stamens 15–20; five of the filaments petaloid and emarginate at the apex; capsules oblong-cylindrical, 3-seeded, 3-valved at the summit; style slightly spirally twisted. *Hook. & Arn.*—Bartonia micrantha, *Hook. & Arn. bot. Beechey, suppl. p.* 343, *t.* 85. (ined.)

California, *Douglas.*—This species we have not seen, and the figure above-cited is not yet published. It appears, as the authors who have described it remark, to form a perfect transition from Bartonia, *Nutt.* to Mentzelia, as well as to Acrolasia, *Presl*. "The seeds are reduced to one to each placenta, placed one above the other. The hairs are jointed, and some of them spinulose at the joints; the spines verticillate and reflexed."

2. CEVALLIA. *Lagasca, nov. gen. & spec.* (1816) *p.* 11, *t.* 1.

Petalanthera, *Torr. mss.*

Limb of the calyx 5-parted; the segments linear, erect. Petals 5, wholly similar to the segments of the calyx, and inserted in the sinuses between them, persistent. Stamens 5, inserted into the base of the calyx-segments, persistent: filaments very short: anthers adnate, introrse, oblong, 2-lobed at the base; the connectivum prolonged into a linear tubular petaloid appendage, nearly the length of the calyx-segments. Ovary coherent with the tube of the calyx, 1-celled, with a solitary ovule suspended from the summit by a thickened funiculus: style short: stigma ovoid-capitate. Fruit dry and indehiscent, obovoid, crowned with the persistent calyx and corolla. Seed oval, filling the pericarp; the testa membranaceous, smooth and even: albumen none. Embryo oval; the cotyledons plano-convex, thick and fleshy: radicle very short.—A branching (biennial or perennial?) herb, clothed with barbed and branching pubescence, and scattered pungent bristles. Leaves alternate, sinuate-pinnatifid. Flowers in globose pedunculate heads. Calyx and corolla very villous, glabrous and colored within.

C. sinuata (Lagasca! l. c.)—Petalanthera hispida, *Nutt.! in jour. acad. Philad.* 7. *p.* 107.

Sources of the Canadian River, near the Rocky Mountains, *Dr. James!* (New Spain, *Nee*, ex *Lagasca!*)—This very interesting plant was collected by Dr. James in Long's Expedition, and was several years since communicated to Mr. Brown under the manuscript name of Petalanthera. That most learned botanist recently recognized its identity with the Cevallia sinuata of Lagasca (described in the little work above-cited, which is appended to his *Elenchus plantarum hort. Matritensi*), and afforded us the opportunity of comparing our plant with an original specimen received from Lagasca himself. That author referred the genus to Boragineæ! The pubescence consists of scattered rigid bristles, bulbous at the base and minutely scabrous, small obtuse stiff hairs which are retrorsely barbed, and very minute hairs with long verticillate branches.

ORDER LVIII. TURNERACEÆ.

Sepals united into an equal 5-lobed calyx, imbricated in æstivation. Petals 5, equal, inserted on the calyx, with a twisted æstivation. Stamens 5, alternate with the petals and inserted below them, distinct: anthers introrse. Ovary free from the calyx, 1-celled, with 3 parietal placentæ: ovules numerous: styles 3, commonly branched or many-cleft at the summit, sometimes 6 (or perhaps rather 3, which are 2-parted). Capsule 3-valved, loculici-

dal. Seeds numerous, anatropous, with a membranaceous arillus on one side; the testa crustaceous and reticulated. Embryo in the axis of fleshy albumen, slightly curved: cotyledons somewhat plano-convex.—Herbaceous or sometimes suffrutescent plants (confined, except one species, to tropical America); the pubescence often hispid, but not stinging. Leaves simple, alternate, exstipulate, sometimes with 2 glands at the apex of the petiole. Peduncles 1-flowered: petals mostly yellow.

1. TURNERA. *Plumier, gen. p.* 15, *t.* 12; *Linn.*; *Gærtn. fr. t.* 78.

Calyx infundibuliform or obconic at the base. Petals longer than the calyx. Styles 3, simple: stigmas flabellate, many-cleft. Capsule 3-valved from the apex to the middle.—Herbs or suffrutescent plants, with the habit of Cistus.

1. *T. cistoides* (Linn.): hirsute with bristly hairs; flowers in the axils of the upper leaves, and racemose at the summit of the stem; pedicel free, articulated above the middle, but not bracteolate; leaves lanceolate, the lower ones oblong, slightly petioled, crenate or obtusely serrate, tomentose beneath, not glandular at the base.—*Plumier, Amer. ed. Burm. t.* 150, *f.* 1; *Pursh, fl.* 1. *p.* 206; *Ell. sk.* 1. *p.* 370.

Fields and barren soil, Georgia! to Florida! June–Sept.—We have some doubt as to the identity of our plant with that of the West Indies, which we have not the means of removing by a comparison of specimens. Ours is apparently a perennial plant, more or less hirsute with rigid fulvous hairs, and besides the lower surface of the leaves is tomentose with a *stellate* pubescence; the upper minutely pubescent in the same manner. The lower leaves are oblong and obtuse, the upper mostly lanceolate, and when the raceme is elongated, the upper floral leaves are usually bract-like and much shorter than the pedicels. The flowers are about an inch in diameter when expanded: the seeds rather large, pale, and slightly curved.

ORDER LIX. PASSIFLORACEÆ. *Juss.*

Sepals 4–5, more or less united below into a tube of variable length, the throat of which is usually lined with a ring of filamentous processes. Petals 4–5, arising from the throat of the calyx on the outside of the filamentous crown, sometimes irregular or wanting, imbricated in æstivation. Stamens 4–5 (very rarely indefinite), monadelphous, surrounding the stalk of the ovary: anthers introrse, but versatile, and at length turned outwards. Ovary free, stipitate, 1-celled, with 3–4 parietal placentæ: styles 3–4, clavate: stigmas dilated. Fruit naked or surrounded with the persistent calyx, sometimes opening by loculicidal dehiscence, often fleshy and indehiscent. Seeds numerous, anatropous, with a brittle sculptured testa,

surrounded by a pulpy arillus. Embryo straight, in the centre of a thin fleshy albumen.—Usually climbing herbaceous or shrubby plants, with alternate mostly stipulate leaves. Flowers showy, often involucrate.

The inner series of floral envelopes, which we, following Lindley, consider as the corolla, is by most botanists termed a second series of sepals, and thus Passiflora is deemed apetalous.

1. PASSIFLORA. *Linn.; Juss. gen. p.* 397.

Calyx urceolate or campanulate at the base, 5- (rarely 4-) cleft; the throat with a conspicuous often double or triple filamentous crown (transformed petals?); the inner portion often a membranous disk. Petals 5 (rarely 4), sometimes none. Stamens 5 (rarely 4), connate with the stipe of the ovary, free or diverging at the summit. Anthers large, elongated, at length reversed and turned outwards. Stigmas 3 (sometimes 4), large, clavate-capitate. Berry pulpy, rarely somewhat membranaceous.—Herbs or shrubby plants, climbing by tendrils. Leaves undivided or variously lobed: petiole often bearing glands. Stipules occasionally wanting or minute. Peduncles axillary, solitary or sometimes several together, mostly 1-flowered, articulated above.—*Passion-flower.*

§ 1. *Pedicels 1-flowered, with a 3-bracteolate involucre near the flower: tendrils simple, from the same axils.*—Granadilla, *DC.*

1. *P. incarnata* (Linn.): leaves deeply 3-lobed, membranaceous, glabrous, or somewhat pubescent beneath, serrate; the lobes ovate-lanceolate, mostly acuminate; petioles with 2 glands near the summit; stipules minute; involucral bracts obovate, glandular; ovary villous-canescent.—*Linn.! spec.* 2. *p.* 995; *Michx.! fl.* 2. *p.* 37; *Ell. sk.* 1. *p.* 154; *DC.! prodr.* 3. *p.* 329.
In dry soil, Virginia! to Florida! and Arkansas! May–July.—♃ Root sometimes tuberiferous. Stem often climbing to the height of 20 or 30 feet. Flowers large, on long pedicels. Segments of the calyx cuspidate below the summit. Petals oval-oblong, white. Crown triple; the 2 outer series composed of long radiating filaments, purple, with a nearly white band; the inner of short erect flesh-colored rays. Berry as large as a hen's egg, oval, glabrous, with a leathery coat, pale-yellow when ripe, eatable; sometimes with 4 placentæ and as many styles.

§ 2. *Pedicels 1-flowered; with a simple tendril from the same axils: involucre none, or minute.*—Cieca, *DC.*

2. *P. lutea* (Linn.): leaves broad, somewhat cordate at the base, obtusely 3-lobed at the summit, entire, glabrous, not glandular; the lobes short and rounded, mucronulate; petiole glandless; stipules minute; pedicels mostly geminate; petals much narrower than the sepals.—*Linn.! spec.* 2. *p.* 958; *Walt.! Car. p.* 223; *Michx.! l. c.*; *Bot. reg. t.* 79; *Ell. l. c.*; *DC.! l. c.*
Thickets, in damp soil, Ohio! and Virginia! to Florida! and Arkansas! May–July.—♃ Stem slender, 3–10 feet long. Leaves pale green. Flowers small, greenish-yellow. Fruit scarcely half an inch in diameter, dark

purple. Styles sometimes 4. Crown consisting of a single row of slender radiating filaments, a second of short clavate erect filaments, and within this a membranous many-cleft disk. Seeds horizontally grooved, and with fine longitudinal ridges.

3. *P. angustifolia* (Swartz): low, suffrutescent; leaves glabrous, not glandular, slightly peltate; the lowermost ovate, somewhat cordate, 3-lobed; the upper lanceolate, sometimes 2–3-lobed; petioles short, with 2 glands above the middle; stipules very small; pedicels short, solitary or geminate; petals none.—*Swartz, prodr. p.* 97; *Willd.! spec.* 3. *p.* 616; *DC. l. c.* P. heterophylla, *Ait.; Jacq. hort. Schœnb.* 2. *t.* 181. P. longifolia, *Lam.*
Key West, *Mr. Bennett!*—Flowers small, yellowish.

4. *P. Warei* (Nutt.): leaves on short biglandular petioles; the lower ones 3-lobed, acute; the upper ovate, undivided; stipules none; peduncles commonly geminate, about the length of the petioles; flowers very small; segments of the crown few, filiform, shorter than the calyx. *Nutt. in Sill. jour.* 5. *p.* 297.
East Florida, *Mr. A. Ware.*—Lower part of the stem suberose. Leaves smooth and shining, thin. Berries about the size of a pea, purple. *Nutt.*—This species is wholly unknown to us.

P. peltata (Cav.) is doubtless not a native of the United States.

ORDER LX. CUCURBITACEÆ. *Juss.*

Calyx 5- (rarely 6-) toothed; the limb sometimes obsolete. Petals 5 (rarely 6), distinct, or commonly more or less united with each other and coherent with the calyx, very cellular and often marked with reticulated veins. Stamens 5, sometimes distinct, commonly united in 3 parcels (two and two, and one separate) so as to appear like 3 stamens only, rarely 3 and diadelphous: filaments of each set sometimes connate: anthers usually long and sinuous, or variously contorted or folded, 2-celled, adnate, extrorse, commonly more or less connate. Ovary coherent with the tube of the calyx, usually of 3 (rarely of 2 or 4) united carpels, sometimes 1-celled by the obliteration of the partitions, or often with each carpel spuriously 2-celled by the introflexion of the placentæ from the axis until it reaches the dorsal suture. Fruit fleshy or juicy, rarely membranous, usually a *pepo*.* Seeds anatropous, compressed, often enveloped by a juicy or

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* A *pepo* is doubtless correctly defined by Arnott to be "a fleshy inferior fruit, either indehiscent or bursting irregularly, and consisting of about 3 carpels, each of which is divided into two cells by its placentiferous margin being so introflexed as to reach the dorsal suture. The sides of the carpel [the dissepiments], and even sometimes the introflexed portion, usually become extremely thick and fleshy, forming the great mass of the ripe fruit, so that by losing the general character of dissepiments, they might almost be said to disappear; and thus at first sight a pepo would be said to be, and has been so described, a 1-celled, fleshy, indehiscent

dry and membranous arillus; the testa coriaceous: albumen none. Embryo straight: cotyledons foliaceous, palmately veined.—Herbs, with succulent stems, climbing by means of tendrils (which are transformed stipules, according to *St. Hilaire*). Leaves alternate, palmately veined. Flowers axillary, monœcious or diœcious, or rarely perfect.

1. BRYONIA. *Linn.; Gærtn. fr. t.* 88; *Seringe, in DC. prodr.* 3. *p.* 344.

Flowers monœcious or diœcious. Calyx with 5 short teeth. Petals 5, distinct or united at the base. STERILE FL. Stamens 5, triadelphous: anthers flexuous. FERTILE FL. Style mostly 3-cleft. Fruit an ovate or globose smooth berry, generally few-seeded.

§ *Styles united to the summit, surrounded at the base by a conspicuous cup-shaped disk: stigmas dilated: ovules solitary in each cell, ascending: berry oval,* 3-*seeded: seeds* (*large*) *compressed, smooth, indistinctly margined,* 3-*toothed at the base.*—TRIANOSPERMA.

1. *B. Boykinii:* scabrous-pubescent; tendrils simple or 2-cleft; leaves cordate, 3-lobed, or sometimes almost 3-parted, denticulate; the middle lobe longest, acuminate-cuspidate; the lateral mostly angled or 2-lobed; sterile and fertile flowers usually from the same axils, 3–5 together, on very short simple pedicels; berries crimson, oval or elliptical.

Low grounds along streams, Georgia, *Dr. Boykin!* Alabama, *Mr. Buckley!* Louisiana, *Dr. Carpenter! Dr. Hale!* June–July.—♃ Root fusiform or tuberous. Stem climbing over bushes, sometimes ascending to the height of 15 or 20 feet. Leaves 3–4 inches in diameter. Flowers small, greenish-white. Fruit 6–8 lines in length, longer than the pedicel, bright crimson, soon turning to dirty yellow. Seeds broadly oval, 4–5 lines long, abruptly pointed at the hilum, and with 2 conspicuous lateral teeth.—B. Americana, *Lam.* is apparently allied to this.

2. MELOTHRIA. *Linn.; Juss. gen. p.* 395.

Flowers polygamous or monœcious. Calyx in the perfect and fertile flowers constricted into a short filiform tube above the ovary, then campanulate, in the sterile flowers infundibuliform-campanulate; the segments subulate, often minute. Petals 5, united into a campanulate corolla; the perfect flowers sometimes apetalous. STERILE FL. Stamens 5, triadelphous: anthers (of the three parcels) connate, at length separate, contorted. A cup-shaped disk or rudiment in the bottom of the calyx. FERTILE FL. Style surrounded at the base by a cup-shaped or lobed disk: stigmas 3, dilated. Sterile fila-

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fruit, with parietal placentæ that sometimes send out false dissepiments towards the axis, as the cucumber and gourd." *Arn. prodr. Ind. Or.* 1. *p.* 340.—The examination of a transverse section of a gourd or melon manifestly shows this to be the proper view of its carpological structure.

ments 3 (rather 5, triadelphous), sometimes wanting. PERFECT FL. like the pistillate, but with fertile stamens. Fruit an oval small many-seeded berry. Seeds (small) obovate, compressed, furfuraceous with minute matted hairs.—Tendrils simple.

1. *M. pendula* (Linn.): stems slender, climbing: leaves (small) roundish-cordate, repand-toothed, 5-angled or 5-lobed; the middle lobe longest, mucronate; sterile flowers in small racemes; the fertile solitary, on filiform pedicels at length as long as the leaves; teeth of the calyx minute; style short, surrounded by a cup-shaped conspicuous disk; fruit small, blackish when ripe.—*Linn.! spec.* 1. *p.* 35. (pl. Gronov.); *Walt. Car. p.* 66; *Michx.! fl.* 2. *p.* 217; *Ell. sk.* 2. *p.* 662: *Seringe! in DC. prodr.* 3. *p.* 313. M. nigra *Raf.! ann. nat.* (1820).

Shady places, Virginia! to Georgia! Alabama! and Louisiana! June–Aug.—Leaves scabrous, 1–2 inches in diameter. Flowers small, yellowish.

2. *M. grandifolia:* leaves (thin and membranous) somewhat cordate at the base, 3-lobed, denticulate; the middle lobe much largest, acuminate-cuspidate; both sterile and fertile flowers on simple very short pedicels, several together in the axils of the leaves; teeth of the calyx linear-subulate, more than half the length of the petals; style rather long, surrounded at the base with a 3-lobed disk; fruit oblong, orange-color, as long as the pedicels.

Low banks of the Mississippi, *Dr. Leavenworth!*—Stem apparently climbing. Leaves 4–6 inches in diameter, somewhat scabrous, on hairy petioles; the lateral lobes often angled near the base or somewhat lobed. Flowers larger than in M. pendula; the sterile ones largest.—We have not seen the seeds or full-grown fruit. The fertile flowers have rudimentary stamens.

3. SICYOS. *Linn.; Juss. gen. p.* 394; *Gærtn. fr. t.* 88.

Flowers monœcious. STERILE FL. Calyx flattish; the teeth 5, subulate or minute. Petals 5, ovate, combined below into a rotate corolla. Stamens 5, all cohering in a tube, or at length separating into 3 parcels: anthers contorted. FERTILE FL. Calyx constricted above the ovary, campanulate. Petals united at the base into campanulate corolla. Disk obsolete or none. Ovary 1-celled, with a solitary suspended ovule: style mostly slender: stigmas 3, rather thick, revolute. Fruit ovate, membranaceous, usually hispid or echinate with spiny bristles. Seed large, compressed, smooth and even; the testa almost crustaceous.—Sterile and fertile flowers usually in the same axils; the former in racemes or corymbs, the latter in pedunculate clusters: petals whitish, with green veins. Tendrils compound. Root annual.

1. *S. angulatus* (Linn.): stem, petioles, and peduncles somewhat viscidly pubescent with long hairs; leaves roundish-cordate, 5-angled or 5-lobed, with 5 primary veins; the lobes denticulate, acuminate, especially the middle one; tendrils 3–5-cleft; sterile flowers in a corymbose (sometimes branched) crowded raceme, on a very long peduncle; fertile flowers on a short peduncle: style slender; fruit viscidly pubescent and echinate with retrorsely scabrous prickly bristles.—*Linn.! spec.* 2. *p.* 1013; *Michx.! fl.* 2. *p.* 217; *Pursh, fl.* 2. *p.* 44; *Ell. sk.* 2. *p.* 663; *Seringe! in DC. prodr.* 3. *p.* 309. S. vitifolia, *Willd. spec.* 4. *p.* 626? S. acutus, *Raf. fl. Ludov.* Bryonoides flore & fructu minore, *Dill. Elth. t.* 51, *f.* 59.

Banks of rivers, Canada (*Michaux*) and New York! to Alabama! and Arkansas! June–Sept.—Peduncles of the sterile flowers at length 4–8 inches long; that of the (very much smaller) fertile flowers 1–2 inches long. Fruit clustered.

2. S. *Oreganus:* slightly pubescent; leaves roundish-cordate, 7–9-angled or somewhat lobed, with as many primary veins arising from the apex of the petiole, denticulate, the angles or lobes acuminate; tendrils 3-cleft; sterile flowers loosely racemose on a very long peduncle, or partly on slender pedicels clustered in the axils; petals ovate-lanceolate; style very short.—S. angulatus, *Hook.! fl. Bor.-Am.* 1. *p.* 220, (partly.)

On the Oregon from near its mouth to Kettle Falls, *Dr. Scouler! Douglas, Mr. Tolmie!*—We have not seen the fruit, and our specimens furnish only one or two fertile flowers, which are on simple pedicels in the axils (although others are probably clustered), and in these the ovary is scarcely pubescent and not hispid.

4. ECHINOCYSTIS.

Flowers monœcious. Calyx flattish, in the fertile flowers slightly contracted above the ovary; the segments 6, filiform-subulate, shorter than the corolla. Petals 6, lanceolate, united at the base into a rotate-campanulate corolla. STERILE FL. Stamens 3, diadelphous, arising from the base of the calyx: filaments short: anthers sigmoid, connate. FERTILE FL. Abortive filaments 3, very small, distinct. Style very short: stigmas 2, large, broadly obcordate, connivent. Fruit somewhat globose, inflated, setose-echinate, membranaceous, at first watery (bursting elastically at the summit?), at length dry, 2-celled, 4-seeded; the cells spuriously 2-celled at the base; the 2 carpels at length separable, reticulate-fibrous. Seeds large, not arillate, erect from near the base of each spurious cell, obovate-oblong, flat, slightly 2-toothed at the base, the margins obtuse.—An annual climbing herb, with palmately 5-lobed leaves, and 3-cleft tendrils. Flowers small, greenish-white; the sterile in long compound racemes; the fertile ones from the same axils, solitary or clustered on a short peduncle.

E. lobata.—Sicyos lobata, *Michx.! fl.* 2. *p.* 217. Momordica echinata, *Muhl.! in Willd. spec.* 4. *p.* 605; *Pursh, fl.* 2. *p.* 444; *DC. prodr.* 3. *p.* 312; *Hook. fl. Bor.-Am.* 1. *p.* 220.

Rich soil along streams, Canada! (from the Saskatchawan) to New York! Pennsylvania! and Missouri. July–Sept.—A nearly glabrous vine, climbing over small shrubs. Leaves membranaceous, mucronately denticulate; the lobes triangular, acuminate-mucronate. Sterile racemes often a foot long. Mature fruit nearly 2 inches in length, armed with weak prickles. Seeds three-fourths of an inch long, nearly smooth and even.—A very distinct genus, more nearly allied to Sicyos than to Momordica.

5. MOMORDICA. *Linn.; Juss. gen. p.* 395; *Gærtn. fr. t.* 88.

Flowers monœcious or sometimes diœcious. Calyx 5-cleft; the tube very short. Petals 5, united at the base. STERILE FL. Stamens 5, triadelphous: anthers connate. FERTILE FL. Style 3-cleft. *Pepo* fleshy, usually muricate and bursting elastically when mature. Seeds enveloped in a fleshy arillus.—Pedicels solitary, 1-flowered, filiform, furnished with a cordate bracteole.

1. *M. Charantia* (Linn.): stems more or less hairy or villous; leaves 5–7-lobed, sinuate-toothed, when young more or less villous or hairy on the under side particularly on the veins; peduncles slender, with a reniform bracteole, which in the sterile flowers is situated about the middle, and in the fertile near the base; segments of the calyx oblong; ovary slender; fruit oblong or ovate, tapering to both ends, more or less tuberculate; seeds with a thick notched margin and a red arillus.—*Linn. spec.* 2. *p.* 1009; *Bot. mag. t.* 2455; *Seringe, in DC. l. c.; W. & Arn.! prodr. Ind. Or.* 1. *p*. 348.

Near Tampa Bay, Florida, *Dr. Burrows! Dr. Leavenworth!*—"Indigenous," according to Dr. Leavenworth; but we think this somewhat doubtful.

6. CUCUMIS. *Linn.; Gærtn. fr. t.* 88; *Lam. ill. t.* 795.

Flowers monœcious or perfect. Calyx tubular-campanulate; the segments subulate, scarcely the length of the tube. Petals (yellow) scarcely combined or coherent with the calyx. STERILE FL. Stamens 5, triadelphous. FERTILE FL. Style short: stigmas 3 (occasionally 4), thick, 2-parted. *Pepo* fleshy, indehiscent. Seeds ovate, compressed, not margined, acute at the hilum.—*Cucumber.*

1. *C.? perennis* (James): perennial; stems procumbent; leaves triangular-cordate, thick, scabrous, the margin sinuate and undulate; tendrils 3-cleft; lobes of the calyx subulate; fruit globose, smooth, nearly sessile; seeds ovate (obovate?), the margin acute.—*E. James, in Long's exped.* 2. *p.* 345; *Torr. in ann. lyc. New York,* 2. *p.* 242. Cucurbita fœtidissima, *H. B. & K. nov. gen.* 2. *p.* 123?

On the arid and sandy wastes along the base of the Rocky Mountains, from the confluence of the Boiling-spring Fork to the sources of the Red River, *Dr. James.* July–Sept.—Root fusiform, 4–5 inches in diameter, descending perpendicularly into the earth to the depth of 4–6 feet. Flowers nearly as large as in Cucurbita Pepo. Fruit as large as an orange. The plant emits a fetid odor. *James.*—Since Dr. James's account, no farther information has been received respecting this interesting plant; but specimens of perhaps the same species occur in Drummond's Texan collection, without flowers or fruit. It is not cultivated, as Seringe states, but truly indigenous.

7. LAGENARIA. *Seringe, diss. in mem. soc. Genev., & in DC. prodr. l. c.*

Flowers monœcious. Calyx campanulate; the segments subulate or rather broad, shorter than the tube. Petals (white) obovate, inserted within the margin of the calyx. STERILE FL. Stamens 5, triadelphous: anthers very long and tortuous. FERTILE FL. Style scarcely any: stigmas 3, thick, 2-lobed, granular. Fruit a fleshy or almost ligneous *pepo,* with a hard rind. Seeds numerous, obovate, compressed, with a tumid border, 2-lobed at the base. Root annual.

1. *L. vulgaris* (Seringe): clothed with a soft pubescence, and exhaling a

fetid musky odor; stem climbing; tendrils 3–4-cleft; leaves cordate, nearly entire or lobed, with 2 glands at the base; flowers fascicled; petals widely spreading; fruit clavate-ventricose, pubescent, at length glabrous and very smooth.—*DC. l. c.* Cucurbita Lagenaria, *Linn.; Lam. ill. t.* 795; *Nutt. gen.* 2. *p.* 228; *Ell. sk.* 2. *p.* 662.

Cultivated by the Indians from the earliest discovery of North America, and naturalized in many portions of the Southern States. It is the well-known *Calibash or Bottle-Gourd.*

Neurosperma, *Raf.* (*in jour. phys. &c.* 1819) is most probably, as Seringe suspects, nothing more than the *Balsam-Apple* (Momordica Balsamina), which is often cultivated, but scarcely naturalized in the United States.

Cucurbita verrucosa (a species of *Squash*) is mentioned by Nuttall as a plant which has long been cultivated by the aborigines beyond the Mississippi.

ORDER LXI. GROSSULACEÆ. *DC.*

Calyx adherent, campanulate or tubular, colored, marcescent, 5- (rarely 4-) cleft; the segments mostly equal, imbricate in æstivation, at length spreading or reflexed. Petals distinct, equal in number to the segments of the calyx and alternate with them, small, inserted in the throat of the calyx. Stamens as many as the petals and inserted alternately with them: anthers introrse. Ovary coherent with the calyx-tube, 1-celled, with 2 parietal placentæ: ovules numerous or sometimes rather few: styles 2 (very rarely 3–4) distinct or united. Fruit a berry, crowned with the remains of the flower, 1-celled, many- (rarely rather few-) seeded. Seeds anatropous, the raphe at length distinct from the gelatinous testa: the inner integument somewhat crustaceous, adhering firmly to the dense fleshy albumen. Embryo minute, excentric, next the micropyle.—Shrubs either spiny or unarmed, with alternate (often fascicled) palmately veined and lobed exstipulate leaves, which are sometimes sprinkled with resinous dots. Flowers (rarely diœcious) racemose, either produced from the same bud with the leaves and terminating the very short axillary branches, or sometimes from leafless buds.

1. RIBES. *Linn.; Juss. gen. p.* 281; *DC. prodr.* 3. *p.* 477.

Grossularia, *Tourn.*—Ribes & Robsonia, *Endl.*

Character same as of the Order.

§ 1. *Stems armed with subaxillary spines and scattered prickles: leaves plicate in vernation: peduncles 2–3-flowered: segments of the calyx, petals, and stamens* 4 *or sometimes* 5: *filaments very much exserted: ovules rather few in number, in a double series: berries prickly.*—ROBSONIA, Berlandier.

1. *R. speciosum* (Pursh): stem thickly armed with bristly prickles, or rarely naked; subaxillary spines 3, united at the base; leaves roundish, 3-lobed, glabrous; the lobes short and obtuse, crenately toothed; peduncles 2–4-flowered, with large ovate bracts; calyx tubular, somewhat 4-sided, deeply 4–5-parted, glandular; petals cuneiform, as long as the erect calyx-segments; stamens very much exserted; style as long as the stamens, minutely 2-cleft at the apex; ovary and pedicels clothed with glandular bristles.—*Pursh! fl.* 2. *p.* 732; *DC. prodr.* 3. *p.* 478; *Don, in Brit. fl. gard.* (*ser.* 2.) *t.* 149; *Lindl. bot. reg. t.* 1557; *Hook. & Arn.! bot. Beechey, suppl. p.* 345. R. stamineum, *Smith! in Rees cyclop.*; *DC. l. c. p.* 477; *Hook.! fl. Bor.-Am.* 1. *p.* 229. R. fuschioides, *Berlandier, in mem. soc. Genev.* 3. *t.* 3.

California, *Menzies! Douglas! Nuttall!*—Flowers large and showy, bright red, resembling those of Fuchsia. "The trunk about as thick as a man's arm." (*Nutt.*)—This singular and beautiful species is indicated as a genus by Berlandier. It has recently been taken up by Spach (in *Suites à Buffon*) and adopted by Endlicher, chiefly on account of its few-seeded berry. The ovary is said by the latter authors to bear about three ovules upon each placenta in a single series. We find however from 8 to 12 upon each placenta disposed in two rows.

§ 2. *Stems usually armed with subaxillary spines, and often prickly: leaves plicate in vernation: peduncles 1–3-flowered: calyx more or less campanulate: ovules very numerous, in several rows: berries often prickly.*—GROSSULARIA, A. Richard. (*Gooseberry*)

2. *R. Menziesii* (Pursh): stems prickly (or naked); subaxillary spines 3; leaves cordate, 5-lobed, incisely serrate, veiny and rugose, tomentose-pubescent beneath; peduncles 1–2-flowered, as long as the leaf; calyx cylindrical-campanulate, deeply 5-cleft, glandular; the segments spreading; stamens 5, included; style a little exserted, 2-cleft; ovary and pedicels clothed with glandular bristles; fruit densely echinate.—*Pursh, fl.* 2. *p.* 732; *DC. l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 229, *& in bot. Beechey, p.* 141 *&* 345. R. ferox, *Smith, l. c.*; *DC. l. c.*

California, *Menzies, Douglas! Nuttall!*—Flowers large, red or deep rose-color.—Our specimens from Douglas's Californian Collection, as well as those from Mr. Nuttall, have not prickly branches: but neither the prickles nor the spines afford constant characters in this genus.

3. *R. subvestitum* (Hook. & Arn.): branches very bristly; subaxillary spines 3–4, slender; leaves cordate, roundish, 3–5-lobed, incisely crenate, slightly hairy above, the lower surface, as well as the petioles, peduncles and calyx, glandularly pubescent; peduncles 1–2-flowered; bracts roundish, sheathing; tube of the calyx cylindrical-campanulate, longer than the very glandular ovary, and shorter than the oblong at length reflexed segments; stamens twice as long as the petals, and shorter than the simple (rarely 2-cleft, ex *Hook.*) glabrous style.—*Hook. & Arn.! l. c.*

California, *Douglas!*—A fine species, with flowers half an inch in length; the segments of the calyx bright purple on the inside: the half-grown fruit is very glandular and hirsute. The anthers are large and mucronate.

4. *R. Cynosbati* (Linn.): stems either unarmed or prickly; subaxillary spines 1–3; leaves cordate, roundish, 3–5-lobed, more or less pubescent, the lobes incisely serrate; peduncles slender, 2–3-flowered, the pedicels divaricate; tube of the calyx cylindrical, very broad and short, slightly contracted at the mouth; the segments at length reflexed, shorter than the tube, longer than the obovate petals; stamens and styles slightly included; style undi-

vided, hairy at the base; fruit prickly or rarely unarmed.—*Linn.! spec.* 1. *p.* 202; *Michx.! fl.* 1. *p.* 111; *Jacq. hort. Vindob.* 2. *t.* 123; *Pursh! fl.* 1. *p.* 166; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 230 (excl. γ.); *Guimp. Otto & Hayne, holz. t.* 135. R. gracile, *Torr.! fl.* 1. *p.* 269.

Woods and hillsides, Canada! and Hudson's Bay to Kentucky! and to the Rocky Mountains near the sources of the Platte, *Nuttall.* May–June.—Leaves pubescent, particularly on the lower surface: petioles downy. Calyx greenish-white, broader than the ovary. Fruit brownish when ripe.—This species, like several others of the section, is occasionally almost destitute of the subaxillary spines; and the fruit is sometimes smooth.

5. *R. oxyacanthoides* (Linn.): stems usually clothed with bristly prickles; subaxillary spines 1–3, often united at the base; leaves roundish, subcordate, 5-lobed, pubescent or nearly glabrous, the lobes deeply toothed or crenate; peduncles very short, about 2-flowered; calyx-tube cylindraceous, pubescent at the base within; the segments spreading, rather longer than the stamens, and about twice the length of the obovate petals; style cleft to the middle, hairy at the base, a little exceeding the stamens; fruit smooth.—*Linn. spec.* 1. *p.* 201; *Pursh, fl.* 1. *p.* 165; *DC. prodr.* 3. *p.* 478; *Hook.! fl. Bor.-Am.* 1. *p.* 230. Grossularia oxyacanthæ foliis, &c. *Dill. Elth. t.* 139.

β. fruit sparsely hispid.—R. setosum, *Dougl.! l. c.*; *Lindl.! bot. reg. t.* 1237.

γ. lobes of the leaves more sharply serrate; calyx and pedicels pubescent; fruit hispid.—R. Cynosbati γ. *Hook.! l. c.*

On rocks, &c. Newfoundland! and throughout Canada to the Saskatchawan!—The young branches are usually thickly clothed with fulvous bristles or prickles, which sometimes occur also on the petioles. Calyx greenish tinged with purple. Fruit bluish-purple or reddish.—In the Hortus Upsalensis, Linnæus states this species to be a native of Virginia; but in the Species Plantarum it is said to come from Canada. We have never met with it within the limits of the United States.

6. *R. hirtellum* (Michx.): stems prickly or naked; subaxillary spines usually solitary, and very short; leaves roundish, cordate, 3–5-lobed, toothed, pubescent beneath; peduncles very short, deflexed, 1–2-flowered; calyx-tube campanulate, glabrous, hairy at the throat within; the segments twice the length of the petals, nearly equalling the stamens and 2-cleft hairy style; fruit smooth.—*Michx.! fl.* 1. *p.* 111; *Pursh, fl.* 1. *p.* 163. R. saxosum, *Hook.! fl. Bor.-Am.* 1. *p.* 230. R. triflorum, *Bigel. fl. Bost. ed.* 2. *p.* 90?

In rocky places, Hudson's Bay! and Lower Canada! to Massachusetts! and on the Alleghany mountains, ex *Pursh.* West to Saskatchawan and Lake Superior! May–June.—This species has the same short peduncles as R. oxyacanthoides, but in the form of the calyx it is more like R. Cynosbati. The spines are sometimes wanting; the leaves are quite small and more or less pubescent. Flowers greenish-white tinged with purple. Fruit (red, *Michx.*) bluish-purple.

7. *R. gracile* (Michx.): branches slender, seldom a little prickly; subaxillary spines 1–3, very small and slender, subulate; leaves roundish, 3-lobed, incisely toothed, pubescent, as well as the slender petioles; peduncles and pedicels elongated, almost filiform, 1–2-flowered, pubescent, as well as the calyx and ovary; segments of the calyx linear-ligulate, many times longer than the very short tube, and about the length of the very hairy filaments, at length recurved; petals lanceolate, minute; anthers ovate-oblong; style as long as the stamens, 2-cleft at the apex, very hairy below; fruit smooth.—*Michx.! fl.* 1. *p.* 111, not of *Pursh*, nor *Torr. fl.*

Mountains of Tennessee, *Michaux!* In Texas, near St. Augustine, *Dr.*

Leavenworth! April.—A quite distinct species with slender branches and very small leaves. We have drawn our description from Dr. Leavenworth's plant, which we believe to be the same with that in the herbarium of Michaux.

8. *R. rotundifolium* (Michx.): stems not prickly; subaxillary spines short, usually solitary; leaves roundish, 5-lobed, nearly glabrous, shining above; the lobes short and obtuse, incisely toothed; peduncles slender, 1–2-flowered, glabrous; calyx cylindrical and narrow, glabrous, as well as the ovary; the segments linear-oblong, a little spreading, twice the length of the tube; filaments exserted, glabrous, twice or thrice the length of the broadly-spatulate unguiculate petals; anthers roundish; style deeply 2-parted, as long as the stamens, hairy below; fruit small, smooth.—*Michx.! fl.* 1. *p.* 110. R. triflorum, *Willd.! hort. Berol. t.* 61, *& enum.* 1. *p.* 51; *DC. prodr.* 3. *p.* 479; *Guimp. Otto, & Hayne, holz. t.* 3; *Torr.! fl.* 1. *p.* 269; *Hook.! fl. Bor.-Am.* 1. *p.* 230. R. gracile, *Pursh! fl.* 1. *p.* 165, not of *Michx.*

In mountainous and rocky places, Massachusetts! New York! to the mountains of N. Carolina! and west to Missouri, and, according to Douglas, beyond the Rocky Mountains. June.—Shrub 3–4 feet high, with spreading recurved branches; the spines occasionally absent. Leaves small, truncate or slightly cordate, or often a little cuneiform at the base; the lower surface, as well as the short petioles, often somewhat pubescent. Fruit about the size of the Black Currant, at length purple, delicious.

9. *R. divaricatum* (Dougl.): branches divaricate, bristly or naked; subaxillary spines 1–3, very stout, at length deflexed; leaves roundish, 3–5-lobed, incisely toothed, often pubescent; peduncles 2–3-flowered, slender, nodding; calyx-tube funnel-shaped, about half the length of the oblong reflexed segments; stamens exserted, more than twice the length of the deltoid unguiculate petals; style as long as the stamens, deeply 2-cleft, hairy below; fruit smooth.—*Dougl.! in hort. trans.* 7. *p.* 515; *Lindl.! bot. reg. t.* 1359; *Hook.! fl. Bor. Am.* 1. *p.* 231.

Banks of streams, Oregon, *Douglas! Dr. Scouler! Nuttall!* also in California!—Resembles R. rotundifolium, *Michx.* but has larger and brownish-purple flowers of a somewhat different shape, and remarkably large and stout spines, although these are said to be occasionally wanting. The fruit is said to be black, about one-third of an inch in diameter, and pleasant to the taste. A specimen in Douglas's Californian Collection, probably the R. triflorum mentioned in the Supplement to the Botany of Beechey's Voyage, p. 346, perhaps belongs rather to the present species.

10. *R. villosum* (Nutt.! mss.): "stems smooth; subaxillary spines 3, stout, unequal; leaves 3-cleft (small) with obsolete lateral lobes, incisely and unequally toothed, canescently tomentose beneath; peduncles mostly 2-flowered; bracts roundish-ovate; calyx (brown, hairy) cleft nearly to the base; petals short, obtuse; stamens somewhat exserted; anthers short and roundish; style 2-cleft; ovary smooth.

"St. Barbara, California; common near the village on the plain." *Nuttall.*—We have only seen a very imperfect specimen of this species, which appears distinct, but is perhaps too near R. divaricatum.

11. *R. irriguum* (Dougl.): subaxillary spines 3; leaves cordate, about 5-lobed, toothed, ciliate, hairy on both sides, veiny; peduncles 3-flowered, glandularly hairy; calyx campanulate; the segments linear, equal to the tube; fruit smooth. *Dougl. in hort. trans.* 7. *p.* 516; *Hook. l. c.*; *Lindl. bot. reg. sub t.* 1349.

Moist mountain-rocks, near springs and streams on the Blue Mountains, lat. 46°, and on the Spokan River, N. W. America, *Douglas.*—Hooker suspects this plant to be the same as R. triflorum, *Willd.* We possess a fragment gathered by Dr. James in the Rocky Mountains (about lat. 41°), which may be the R. irriguum of Douglas; but the description of that species is too imperfect to determine the question. It has slightly pubescent leaves, very short peduncles; the narrow calyx-segments are longer than the tube; the stamens are included and not longer than the spatulate petals; the style is cleft at the summit only, and is a little longer than the stamens; the fruit is smooth.

12. *R. Missouriense* (Nutt.! mss.): "subaxillary spines 1–3, stout; leaves roundish or somewhat reniform, cuneate at the base, 3–5-lobed, pubescent beneath; the lobes nearly equal, short and obtuse, crenately toothed or incised; peduncles elongated, 2–3-flowered; tube of the calyx shorter than the linear elongated at length reflexed segments; petals very short, retuse; stamens glabrous and, with the hairy 2-cleft style, greatly exserted; fruit brown, smooth.

"Missouri, common throughout Independence County, where it is sometimes cultivated; bearing abundance of flowers and fruit; the latter somewhat glaucous, and agreeably subacid. Stems smooth, 4–6 feet high; the branches also smooth: spines at length very stout, as in R. Uva-crispa. Peduncles nearly glabrous; the bracts roundish and glandularly ciliate. Calyx yellowish-green. Style at length exserted beyound the stamens." *Nuttall.*—Flowers rather large. Allied to R. rotundifolium and R. niveum?

13. *R. niveum* (Lindl.): branches spiny, the spines 1–3; leaves roundish, obtusely 3-lobed, crenately incised, entire at the base, glabrous; peduncles about 2-flowered; the sepals reflexed; stamens much exserted, connivent, hairy, longer than the hairy style; fruit black, smooth. *Lindl. bot. reg. t.* 1692.

North West America [Oregon], *Douglas.*—Berry similar in size and appearance to R. nigrum, with a rich subacid and perfumed vinous flavor. Flowers pendulous. Segments of the calyx and petals white. *Lindl.*

14. *R. Californicum* (Hook. & Arn.): glabrous; branches not prickly; subaxillary spines 3, stout; leaves reniform-cordate, 3–5-lobed, the lobes incisely crenate; peduncles 1–3-flowered, with roundish bracts; segments of the calyx lanceolate, thrice the length of the tube, at length reflexed; stamens thrice the length of the petals; style simple, glabrous, much exserted; ovary glandular.—*Hook. & Arn.! l. c.*

California, *Douglas!*—Leaves very small. Anthers large, ovate, mucronate.

15. *R. occidentale* (Hook. & Arn.): glabrous; branches not prickly; subaxillary spines 1–3; leaves reniform, 3–5-lobed, the lobes crenately incised; peduncles 1–3-flowered; calyx tubular-campanulate; the segments spreading, longer than the tube, about the length of the stamens; style exserted, cleft to the middle, glabrous; ovary hispid.—*Hook. & Arn.! bot. Beechey, suppl. p.* 346.

California, *Douglas!*—Leaves very small. Petals broadly obovate, truncate, involute. Anthers ovate, rather large, mucronate.

16. *R. lacustre* (Poir.): young stems very prickly; subaxillary spines several, weak; leaves cordate, 3–5-parted, the lobes deeply incised; racemes 5–9-flowered, loose; calyx rotate; stamens about the length of the petals; style short, glabrous, 2-cleft; ovary glandular-hairy; fruit small, hispid.—*Poir. suppl.* 2. *p.* 856; *Pursh, fl.* 1. *p.* 165; *Nutt.! gen.* 1. *p.* 140; *Torr.! fl.* 1. *p.* 270; *DC.! prodr.* 3. *p.* 478; *Hook.! l. c. p.* 232; *Guimp. Otto, & Hayne, holz. t.* 136. R. oxyacanthoides, *Michx.! fl.* 1. *p.* 111. R. oxyacanthoides β. lacustre, *Pers.* R. echinatum, *Dougl.*; *Lindl. bot. reg. sub t.* 1349, ex *Hook.*

In mountain swamps &c. New York! and Massachusetts! north to near the Arctic circle. Also in the mountains of Oregon and N. California, according to *Douglas*. (*Hook. l. c.*) June.—Stems 3–4 feet high; the subaxillary spines scarcely different from the prickles. Petioles hairy. Peduncles slender, nodding, pubescent. Fruit dark purple, unpleasant to the taste.—This species differs from the others of this section in its many-flowered racemes.

§ 3. *Stems neither prickly nor spiny: leaves plicate in vernation: racemes several-flowered: calyx campanulate or cylindrical: ovules numerous, in two or more rows: berries unarmed.*—RIBESIA, Berlandier. (*Currant*)

Ribes & Botrycarpum, *A. Richard.*—Calobotrya, Coreosma, Cerophyllum & Rebis, *Spach.*

* *Flowers greenish.*

17. *R. floridum* (L'Her.): leaves sprinkled on both sides with resinous dots, sharply 3–5-lobed, subcordate; the lobes acute, doubly serrate; racemes pendulous, pubescent; bracts linear, longer than the pedicels; calyx tubular-campanulate, glabrous; the segments oblong-spatulate, about the length of the tube; style undivided; fruit ovoid-globose, black, glabrous.—*L'Her. stirp.* 1. *p.* 4; *Willd.! spec.* 1. *p.* 1156; *Torr.! fl.* 1. *p.* 267; *DC.! prodr.* 3. *p.* 482; *Guimp. Otto, & Hayne, holz. t.* 1; *Hook.! fl. Bor.-Am.* 1. *p.* 233; *Darlingt. fl. Cest. p.* 160. R. nigrum *β. Linn.* R. recurvatum, *Michx.! fl.* 1. *p.* 110. R. Pennsylvanicum, *Lam. dict.* 3. *p.* 49. Ribesium nigrum &c. *Dill. Elth. t.* 224. Coreosma florida, *Spach! in ann. sci. nat.* (*ser.* 2) *p.* 9.

In woods, from Canada! (lat. 54°) to Virginia and Kentucky! April–May.—Stems 3–4 feet high. Leaves with 3 spreading acute lobes, and sometimes two smaller ones near the base, pubescent beneath. Flowers rather large, yellowish-green. Style sulcate. Berries inferior in size and flavor to the Common Black Currant of the gardens (which this species closely resembles).

18. *R. Hudsonianum* (Richards.): branches erect; leaves 3–5-lobed, glabrous above, mostly pubescent and sprinkled with small resinous dots beneath; the lobes spreading, somewhat ovate, acute, coarsely serrate; racemes erect; bracts setaceous, much shorter than the pedicels; calyx campanulate, pubescent externally, deeply 5-parted; the segments lanceolate-oblong; style undivided; ovary obovate, dotted with glands; fruit globose, black, glabrous.—*Richards.! appx. Frankl. journ. ed.* 2. *p.* 6; *Hook.! fl. Bor.-Am.* 1. *p.* 233. R. nigrum, *Richards. l. c. ed.* 1. (excl. syn.)

β. racemes longer; calyx nearly glabrous. *Hook. l. c.*—R. petiolare, *Dougl. in hort. trans.* 7. *p.* 514, ex *Hook.*

Hudson's Bay to the Rocky Mountains, north to lat. 57°, *Richardson! Drummond!* &c. *β.* Mountains of Oregon above Kettle Falls, *Douglas.*—Leaves palmately lobed about to the middle, scarcely ever cordate according to Richardson, but they are uniformly so in our specimens. Flowers very small, white.—A very distinct species, resembling R. nigrum in the fruit, the peculiar odor of the plant, &c.

19. *R. prostratum* (L'Her.): stems reclined; leaves deeply cordate, glabrous, 5–7-lobed; the lobes somewhat ovate, acute, incisely doubly serrate; racemes erect, slender; bracts small, much shorter than the bristly-glandular pedicels; calyx rotate, the segments obovate; style deeply 2-cleft; petals

spatulate, very small; fruit (and ovaries) clothed with glandular bristles, red, globose.—*L'Her. stirp.* 1. *p.* 3, *t.* 2; *Pursh! fl.* 1. *p.* 163; *Torr.! fl.* 1. *p.* 268; *DC.! prodr.* 3. *p.* 482; *Hook.! l. c.* (excl. β.) R. glandulosum, *Ait. Kew.* (*ed.* 1) 1. *p.* 279; *Richards.! l. c. ed.* 1. R. rigens, *Michx.! fl. p.* 110; *Bigel. fl. Bost. ed.* 2. *p.* 90. R. laxiflorum, *Richards.! l. c. ed.* 2. (excl. syn.) R. trifidum, *Michx.! l. c.*

Hills and rocky places, Newfoundland! and throughout Canada (from lat. 57°) to Pennsylvania! west to Lake Superior! and the Rocky Mountains, ex *Hook.* May.—Stems procumbent, rooting; branches erect: the plant exhaling a faint disagreeable odor, resembling that of Symplocarpus fœtida (Skunk Cabbage). Calyx greenish with purplish veins: the petals and anthers often purple. Berries rather large, unpleasant to the taste.

20. *R. laxiflorum* (Pursh): leaves deeply cordate, glabrous, 5–7-lobed; the lobes ovate, acute, incised or doubly serrate; racemes erect, pubescent; bracts linear-spatulate, much shorter than the slender glandular pedicels; calyx rotate, the segments orbicular; petals broadly flabelliform; style 2-parted; fruit clothed with glandular bristles, red, globose.—*Pursh, fl.* 2. *p.* 731; *DC. l. c.* R. affine, *Dougl.! mss.*; *Bongard! veg. Sitcha, l. c. p.* 138. R. prostratum β. *Hook.! l. c.*

N. W. Coast, *Menzies*, *Douglas*, &c. Norfolk Sound, *Eschscholtz!* Sitcha, *Bongard!*—This plant so closely resembles R. prostratum that we greatly incline to consider it, with Hooker, as a variety of that species. But the petals are very different in shape; the flowers decidedly larger (although by no means of the size of those of R. floridum, as Pursh states,) and apparently of a purple color.

21. *R. rubrum* (Linn.): leaves subcordate, obtusely 3–5-lobed, pubescent beneath or at length nearly glabrous, serrate, the teeth mucronate; racemes pendulous, produced from lateral buds distinct from the leaves; calyx rotate, the segments roundish; petals truncate or slightly obcordate; style very short, 2-cleft; fruit glabrous, red, globose.—*Linn. spec.* 1. *p.* 200; *Engl. bot. t.* 1289; *Wahl. fl. Lapp. p.* 65; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 6; *Hook.! fl. Bor.-Am.* 1. *p.* 232. R. albinervium, *Michx.! fl.* 1. *p.* 110.

Throughout Canada to the mouth of Mackenzie River, *Richardson!* *Drummond.* In damp woods and swamps, St. Johnsbury, Vermont, *Mr. Carey!* Sault St. Marie, *Dr. Pitcher!* and at the sources of the St. Croix River, *Dr. Houghton.* May–June.—Respecting this species, which appears to be abundant in our northern latitudes, we wholly accord with Richardson and Hooker, as our specimens agree in every respect with the European R. rubrum.

22. *R. resinosum* (Pursh): plant clothed in every part with resinous glandular hairs; leaves roundish, 3–5-lobed; racemes erect; bracts linear, longer than the pedicels; calyx flattish; petals obtusely rhomboidal; fruit hirsute. *Pursh! fl.* 1. *p.* 163.

"On the mountains of North America. *Fraser.* April–May." *Pursh.*—The mountains of North Carolina are doubtless meant. We have seen a fragment of this plant in Mr. Lambert's herbarium (under the name of R. Fraseri), and another in that of Sir Wm. Hooker, sent from the Southern States by *Mr. Parker.*—The figure under this name in *Bot. mag. t.* 1583, is said by Spach to belong to R. orientale.

23. *R. bracteosum* (Dougl.): leaves on long petioles, cordate, deeply 5–7-lobed, sprinkled with resinous dots beneath; the lobes acuminate, coarsely doubly serrate or incised; racemes (sometimes terminal) very long, erect; pedicels rather erect, a little exceeding the spatulate bracts; calyx rotate,

glabrous; fruit black, sprinkled with resinous dots.—*Dougl.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 233; *Bongard! veg. Sitcha, l. c. p.* 137.

Oregon, *Douglas! Scouler! Nuttall!* in shady woods. Sitcha, *Bongard!*—A striking species, 5–8 feet high; the full-grown leaves frequently 6 inches in diameter, on petioles about the same length. Racemes often 6–10 inches long, deflexed in fruit.

24. *R. cereum* (Dougl.): leaves (small) roundish, mostly cordate, 3–5-lobed, incisely crenate, viscid-puberulent or nearly glabrous, clothed with white waxy dots on one or both sides; racemes nodding, somewhat capitate, 3–5-flowered; pedicels scarcely any; bracts ovate, appressed to the ovary; calyx tubular, glandular; the segments very short, recurved; petals minute, orbicular; style undivided; stigmas 2, capitate; fruit a little glandular, globose.—*Dougl.! in hort. trans.* 7. *p.* 312; *Lindl.! bot. reg. t.* 1263; *Hook.! fl. Bor.-Am.* 1. *p.* 234, *& bot. mag. t.* 3008. R. inebrians, *Lindl. bot. reg. t.* 1471. R. pumilum, *Nutt.! mss.*

β. flowers smaller; leaves reniform-cordate, scarcely lobed.—R. reniforme, *Nutt.! in jour. acad. Philad.* 7. *p.* 26.

Banks of the Oregon and its tributary streams, from the Great Falls to the Rocky Mountains, *Douglas! β.* Rocky Mountains, *Mr. Wyeth! Nuttall!*—A low shrub, with small viscid leaves, and rather large greenish-white flowers. Bracts sometimes crenate or incised.—In the character of Nuttall's R. reniforme the bracts are said, doubtless by an error of the pen, to be much shorter, instead of longer than the pedicels.

25. *R. viscosissimum* (Pursh): viscid-pubescent; leaves cordate, roundish, obtusely 3–5-lobed; the lobes short, rounded, doubly crenate, somewhat incised; racemes erect, somewhat corymbose; bracts spatulate, rather shorter than the glandular pedicels; calyx campanulate, the segments shorter than the tube; style 2-cleft at the apex; fruit ovoid, black, viscid-pubescent.—*Pursh, fl.* 1. *p.* 163; *DC. l. c.; Dougl.! in hort. trans.* 7. *p.* 511; *Hook.! fl. Bor.-Am.* 1. *p.* 234, *t.* 76. Coreosma viscosissima, *Spach, l. c.*

Rocky Mountains near the sources of the Oregon, *Lewis, Douglas! Nuttall!* Also on hills near the Spokan River and Kettle Falls, at an elevation of 8000 feet, *Douglas.* June.—Flowers large, greenish-yellow. Berries unpleasant to the taste.

* * *Flowers red: fruit destitute of pulp.*

26. *R. glutinosum* (Benth.): leaves cordate, about 3-lobed, serrate, nearly glabrous, somewhat viscous, veiny; racemes 30–40-flowered, pubescent and viscous, much longer than the leaves; pedicels longer than the flowers; calyx tubular-campanulate; the segments oblong, obtuse, spreading, longer than the obovate (red) petals; style 2-cleft at the apex; fruit ovoid, glandular-hirsute and viscid.—*Benth.! in hort. trans.* (*n. ser.*) 1. *p.* 476; *Hook. & Arn.! bot. Beechey, suppl. p.* 345.

California, *Douglas!*—Flowers as large as in R. sanguineum; the racemes much longer than in that species. Petioles dilated and membranous at the base, pectinately ciliate, glandular.

27. *R. sanguineum* (Pursh): young branches and petioles glandularly puberulent; leaves cordate, 3–5-lobed, doubly serrate, glabrous above, veiny and tomentose-canescent beneath; racemes puberulent and glandular, loose, about twice the length of the leaves; pedicels about the length of the flower, rather shorter than the obovate-spatulate (red) bracts; calyx tubular-campanulate; the segments obovate, spreading, as long as the tube, and a little exceeding the spatulate petals; style minutely 2-cleft at the apex; fruit subglobose, sparsely glandular-hirsute.—*Pursh! fl.* 1. *p.* 164; *Smith, l. c.;*

Dougl.! in hort. trans. 7. *p.* 509, *t.* 13; *Lindl.! bot. reg. t.* 1349; *Hook.! fl. Bor.-Am.* 1. *p.* 234 (excl. syn.), *& bot. mag. t.* 3335. Calobotrya sanguinea, *Spach, l. c.*

Throughout Oregon! abundant in rocky situations along streams.—The most ornamental species of the genus, bearing a profusion of deep rose-colored flowers; now common in cultivation. "Berries insipid, covered with a dense bloom." (*Nutt.*)

26. *R. malvaceum* (Smith): young branches and petioles villous with a viscid pubescence and glandular; leaves cordate, 3–5-lobed, doubly serrate, very rugose and hispidly scabrous above, veiny and villous-tomentose beneath; racemes scarcely longer than the leaves; flowers nearly sessile, crowded; bracts ovate, sometimes incised; calyx tubular; the segments ovate, shorter than the tube, spreading; petals very short, obovate-orbicular; style minutely 2-cleft at the summit; fruit ovoid, hairy.—*Smith, in Rees, cyclop.; DC. prodr.* 3. *p.* 383; *Benth.! l. c.; Hook. & Arn.! l. c.* R. sanguineum, *Hook. & Arn. l. c. p.* 141. R. tubulosum, *Eschs.! in mem. acad. St. Petersb.* (1826) 10. *p.* 282. R. tubiflorum, "*Meyer, in mem. acad. Mosc.* 7;" *Don. syst. gard. & bot.* 3. *p.* 137.

California, *Menzies! Douglas! Nuttall!*—A very distinct species. The flowers are apparently not so brightly colored as in R. sanguineum. The middle lobe of the leaves is ordinarily longer than the lateral ones.—The description of R. tubulosum of Eschscholtz accords pretty well with this species, except that the petals are said to be oblong and longer than the calyx-segments.

§ 4. *Stems neither prickly nor spiny: leaves convolute in vernation: racemes many-flowered: bracts foliaceous: calyx long and tubular* (*bright yellow*): *berries unarmed.*—SIPHOCALYX (*Symphocalyx*, Berlandier), Endl. (Chrysobotrya, *Spach.*)

27. *R. aureum* (Pursh): glabrous; leaves 3-lobed, ciliate when young; the lobes divaricate, incisely few-toothed; calyx tubular, long and slender; the segments spreading, much shorter than the tube, about twice the length of the truncate erosely denticulate petals; fruit glabrous.—*Pursh! fl.* 1. *p.* 164; *Bot. reg. t.* 125; *Berlandier, l. c. t.* 2, *f.* 23; *DC.! prodr.* 3. *p.* 235; *Hook.! l. c. p.* 235. R. longiflorum, *Nutt.! in Fras. cat.*

α. fruit oblong or turbinate.—R. palmatum, *Desf.! cat. hort. Par.* Chrysobotrya revoluta, *Spach! l. c.*

β. fruit smaller, globose.—R. flavum, *Colla, hort. Rip.* ex *Spach; Berlandier, l. c.; DC. l. c.* R. fragrans, *Lodd. bot. cab. t.* 1533? Chrysobotrya intermedia, *Spach! l. c.*

Banks of streams, Arkansas! and Missouri! to the Great Falls of the Oregon! now abundant in cultivation. April–May.—Flowers bright golden yellow. Berries yellow, at length turning brownish or black, pleasant.

28. *R. tenuiflorum* (Lindl.): glabrous; leaves when young covered with a mealy bloom, roundish, 3-lobed; the lobes entire or obtusely 2–3-toothed at the apex; calyx tubular, very slender; the segments shorter than the tube, longer than the spatulate nearly entire petals; fruit glabrous.—*Lindl.! in hort. trans.* 7. *p.* 242, *& bot. reg. t.* 1274; *Hook.! l. c., & bot. Beechey, suppl. p.* 345. Chrysobotrya Lindleyana, *Spach! l. c.*

With the preceding; also in N. California, *Douglas!* April–May.—Flowers much smaller than those of R. aureum: the fruit also smaller, globose.—"The fruit is the size of the Red Currant, with a thick skin and a dense mucilaginous pulp, of an agreeable flavor, but possessing little acidity.

There are two varieties, the one bearing black, the other yellow fruit: the former changes from yellow to red, and finally acquires a deep blackish purple hue, the latter always retains its yellow color." *Lindl.*

ORDER LXII. CACTACEÆ. *Juss.*

Sepals numerous, usually indefinite, and confounded with the petals, imbricated, either coherent with and crowning the ovary, or covering its whole surface. Petals numerous, usually indefinite, in several series, arising from the orifice of the calyx. Stamens indefinite, cohering more or less with the petals and sepals: filaments long, filiform: anthers ovate, versatile. Ovary fleshy, coherent with the calyx, 1-celled, with numerous parietal placentæ: ovules indefinite: styles united in a long tube or column: stigmas as many as the placentæ. Fruit succulent, 1-celled, many-seeded. Seeds, after having lost their adhesion nestling in the pulp, ovate or obovate, anatropous, destitute of albumen. Embryo either straight, curved, or spiral: radicle thick, obtuse: cotyledons (in the leafless species) often obsolete.—Succulent shrubby plants (American); the stems usually angular, or two-edged, or foliaceous. Leaves almost always wanting; when present fleshy or spine-like. Flowers (mostly large and showy) sessile.

East of the Mississippi, Opuntia vulgaris extends as far north as lat. 41° or 42°; but along the Rocky Mountains and on the Missouri several species occur as far as the 45th or 46th degree of north latitude, and are found at a considerable elevation on the mountains. Farther south on both sides of the mountains, Cactaceæ doubtless occur in considerable numbers: but on account of the extreme difficulty of preserving and transporting specimens, it is almost impossible to obtain materials for their study.

1. MAMMILARIA. *Haworth, syn. p.* 177; *DC. prodr.* 3. *p.* 458.

Tube of the calyx adherent to the ovary; the lobes 5–6, crowning the young fruit, colored. Petals 5–6, scarcely distinct from the calyx, longer than the sepals and united with them into a tube. Stamens filiform, in several series. Style filiform: stigma 5–7-cleft, radiate. Berry smooth.—Plants roundish or somewhat cylindrical, destitute of a woody axis, often with a somewhat milky juice, covered with conical or mammæform crowded spirally disposed tubercles, which bear deciduous spines and tomentum at their extremity. Flowers sessile among the tubercles, usually in a transverse zone. *DC.*

1. *M. simplex* (Haworth): simple, obovate, the axils glabrous; tubercles ovate, bearing spines at the apex; spines rigid, straight, radiating, red; flowers whitish. *DC.—Haw. syn. pl. succ. p.* 177; *DC. prodr.* 3. *p.* 459. Cactus mammilaris, *Linn.! DC. pl. grass. t.* 3; *Nutt. gen.* 1. *p.* 295.

High hills of the Missouri, *Nuttall.*—Berry scarlet, about equal with the tubercles. *Nutt.* Tubercles in 18–20 series, turning to the left, about 20 or 25 in each series: the axils at first somewhat tomentose. *DC.*—It is singular, if Mr. Nuttall's plant be the same with the tropical species, that it should be found so far north.

2. *M. vivipara* (Haworth): cæspitose, the glomerules subglobose; tubercles cylindric-ovate, bearded, marked above with a proliferous groove; flowers (bright-red) central, large, exserted; exterior segments of the calyx ciliate; fruit filiform, greenish. *Nutt.*—*Haw. l. c. p.* 42; *DC. l. c.* Cactus (Melocactus) viviparus, *Nutt. gen.* 1. *p.* 295.

Summits of gravelly hills, Missouri. June–Aug.—Flowers large, almost similar to those of C. flagelliformis. Roots long and fusiform, penetrating deep into the soil. Plants sometimes forming masses 2 or 3 feet broad. Berry about the size of a grape, smooth and eatable. *Nutt.*

2. ECHINOCACTUS. *Link & Otto, diss.* (1827); *DC. prodr.* 3. *p.* 461.

Sepals numerous, imbricated, adnate to the base of the ovary and united in a very short tube; the exterior involucriform, the inner petaloid. Stamens numerous. Style filiform, many-cleft at the apex. Berry somewhat squamose with the vestiges of the sepals.—Plant simple, ovate or globose, leafless, with alternate vertical ribs and furrows; the former bearing fascicles of spines. Spadix none. Flowers from the clusters of spines at the summit of the ribs, similar to those of Cereus, but with scarcely any tube. *DC.*

1. *E.? viridescens* (Nutt. mss. under Melocactus): "large and nearly globose, with 20 or more angles; spadix none; flowers (rather large) yellowish-green, from the upper clusters of spines; spines radiating, unequal; three of them usually larger, broad, acuminate, transversely striate; fruit green and smooth.

"Arid hills &c. near St. Diego, California.—Sometimes a foot high and 9–10 inches in diameter; seldom if ever laterally clustered. Segments of the calyx ciliate, nearly the length of the linear-lanceolate petals. Berry about the size of a gooseberry." *Nuttall.*—We have not seen the plant, but it seems to be an Echinocactus rather than Melocactus.

3. CEREUS. *DC. cat. hort. Monsp.* (1813) & *prodr.* 3. *p.* 462.

Sepals [and petals] very numerous, imbricated, adnate to the base of the ovary, united in a long tube; the exterior shorter and calycine, the middle ones longer and colored, the interior petaloid. Stamens very numerous, coherent with the tube. Style filiform, many-cleft at the apex. Berry somewhat tuberculate or squamose with the vestiges of the sepals.—Fleshy elongated shrubs, with a ligneous axis and an internal pith, grooved vertically; the angles bearing fascicles of spines, either numerous or few, or rarely only 2. Flowers from the clusters of spines. *DC.*

There is a large columnar species in Key West (perhaps C. Peruvianus), and several Cacteæ noticed by Dr. James along the base of the Rocky Mountains (C. cylindricus, *James, in Long's exped.* &c.) appear to belong to this genus, but we have not the means for characterizing them. To this genus the following species seems to belong.

1. *C.? Californicus* (Nutt. mss. under Cactus): "erect and shrubby, with numerous clusters of long and short spines; the branches somewhat cylindric, repandly grooved, reticulated; flowers small, yellow; fruit dry and spiny.
"Arid hills and denuded tracts near St. Diego, California, common." *Nutt.*

4. OPUNTIA. *Tourn. inst. t.* 122; *Haworth, syn. p.* 187; *DC. l. c.*

Sepals and petals numerous, adnate to the ovary, not produced into a tube; the interior petaloid, obovate, spreading. Stamens numerous, shorter than the petals. Style cylindrical, constricted at the base: stigmas numerous, thick, erect. Berry umbilicate at the apex, tuberculate, often prickly. Embryo somewhat spiral, nearly terete: plumule small.—Shrubby plants, with articulated branches; the joints (rarely terete) mostly compressed and dilated, bearing fascicles of prickles or bristles arranged in a quincuncial or spiral order. Flowers (yellow or red) arising from the clusters of prickles or along the margin of the joints. Stamens somewhat irritable. *DC.*

1. *O. vulgaris* (Mill.): diffusely prostrate, creeping; joints ovate; prickles short and very numerous, usually with several strong and subulate (yellow) spines; flowers yellow; fruit crimson, nearly smooth.—*Mill. dict. t.* 191; *Haw. l. c.; DC. l. c.* ; *Hook. bot. mag. t.* 2393. Cactus Opuntia, *Linn.; Michx. fl.* 1. *p.* 282; *Pursh, fl.* 1. *p.* 327; *Nutt. gen.* 1. *p.* 296; *Ell. sk.* 1. *p.* 537; *Torr.! fl.* 1. *p.* 467. C. humifusus, *Raf. ann. nat. p.* 15.
Sandy fields and on rocks, New York! to Florida.—Fruit obovate, umbilicate, eatable. Petals much longer than the calyx. In the Northern States the plant seldom produces the stronger spines.—*Prickly Pear.*

2. *O. Ficus-Indica* (Haworth): joints ovate-oblong, obtuse at each end (a foot in length); prickles very short, setaceous, immersed in wool; flowers sulphur-color. *DC. l. c.*—Cactus Ficus-Indica, *Linn. spec.* 1. *p.* 468; *Willd. spec.* 2. *p.* 944.
Key West, *Mr. Bennett!*—Fruit large, eatable.—*Indian Fig.*

3. *O. Missouriensis* (DC.): joints large, nearly orbicular, very spiny; spines of two kinds; the larger radiate, persistent; flowers numerous, aggregated (pale sulphur-yellow, rose-color towards the base); fruit dry and spiny. *Nutt.*—*DC. prodr.* 3. *p.* 472. O. polyacantha, *Haworth.* Cactus ferox, *Nutt. gen.* 1. *p.* 296; *Torr. in ann. lyc. New York.* 2. *p.* 202; not of *Willd.*
Arid plains of the Missouri, common, *Nuttall.* Also on the Platte and Arkansas, and on the Rocky Mountains, *Dr. James.* July.—This is said to be a much larger plant than the common Prickly Pear. "Thorns formidable. Fruit deep purple, as large as a hen's egg." Stigmas 8–10, greenish. *Nutt.*

4. *O. rutila* (Nutt. mss.): "spines strong and numerous, as well on the fruit as the joints; flowers carmine-red.
"Arid clay hills in the Rocky Mountain range, near the Colorado of the West, about lat. 42°." *Nuttall.*

5. *O. fragilis* (Nutt. under Cactus): joints short, oblong, somewhat terete, very fragile; spines of 2 kinds; flowers solitary at the summit of the joints, small; fruit dry and spiny.—*Nutt. gen.* 1. *p.* 296; *DC. prodr.* 3. *p.* 472; *Torr. in ann. lyc. New York*, 2. *p.* 202.

Sterile but moist situations on the Missouri, the Platte &c., from the Mandans to the mountains, *Nuttall, Dr. James.*—A very peculiar species.

ORDER (LXIII.) MESEMBRYANTHEMACEÆ. *Lindl.*

Ficoideæ, *Juss., DC.* partly.

Two or more species of Mesembryanthemum are said to be naturalized in California, and one Mr. Nuttall suspects to be native; but there is no account of the species in his notes; and we have seen no specimens.

ORDER LXIV. SURIANACEÆ. *Arn.*

Sepals 5, persistent: æstivation twisted, imbricated. Petals 5, alternate with the sepals, distinct, inserted into the bottom of the calyx. Stamens 5, alternate with the petals, sometimes with 5 alternating ones that are occasionally abortive, all inserted with the petals: filaments persistent, distinct, subulate from a broad base, hairy below: anthers 2-celled, bursting longitudinally. Torus fleshy, filling up the bottom of the calyx, supporting the ovaries on its middle and the petals and stamens on its margin. Ovaries 5, opposite to the petals, distinct, each with a long style arising from the inner angle near the base: ovules in pairs, collateral, erect, straight, with the foramen at the opposite extremity from the hilum [*id est*, orthotropous]. Fruit of 5 coriaceous pyriform indehiscent carpels. Seeds solitary, uncinate, attached to the base of the carpels: albumen none. Embryo of the same shape as the seed: radicle as long as the cotyledons, at the opposite end from the hilum; cotyledons oblong, fleshy, incumbent.—Sea-side shrubs. Leaves simple, oblong-spatulate, thickish, pubescent, crowded at the apices of the branches, exstipulate. Flowers yellow, bracteate, somewhat terminal. *Arn.*

1. SURIANA. *Plumier, gen.* 37; *Linn.*; *Lam. ill. t.* 389.

Character the same as of the Order.

S. maritima (Linn.)—*Plum. Amer. ed Burm. t.* 249; *Pluk. alm. t.* 241. *f.* 5; *DC. prodr.* 2. *p.* 91; *W. & Arn. prodr. fl. Ind. Or.* 1. *p.* 361.
Key West, *Mr. Bennett!* Southern Florida, *Dr. Hasler!*—This plant is found on the sea-shores of almost every quarter of the globe, within the tropics.

ORDER LXV. CRASSULACEÆ. *Juss.*

Sepals 4–5, or rarely 3–20, imbricated in æstivation, more or less united at the base, persistent. Petals as many as the sepals and al-

ternate with them, not unguiculate, imbricate in æstivation, inserted on the base of the calyx, sometimes connate into a monopetalous tube. Stamens as many as the petals and alternate with them, or twice as many, inserted with the petals or adnate to their base: filaments subulate or linear-filiform: anthers introrse. A hypogynous scale usually at the base of each carpel. Ovaries always equal in number to the petals and opposite them, distinct, or rarely more or less united, with numerous (or rarely few) ovules in 2 rows, subulate with the persistent styles. Carpels follicular in fruit, usually many-seeded, opening by the inner suture; when combined, the dehiscence anomalous. Seeds anatropous, with a membranaceous often loose testa. Embryo straight in the axis of a thin fleshy albumen.—Succulent or fleshy herbs, or sometimes suffruticose plants, with simple exstipulate (rarely membranaceous) leaves. Flowers usually cymose.

TRIBE I. CRASSULEÆ. *DC.*

Carpels (follicles) distinct, dehiscent by the inner suture.

1. TILLÆA. *Mich. gen. t.* 20; *Linn.*; *Endl. gen. p.* 809.

Sepals 3–4, united at the base. Petals 3–4, distinct. Stamens 3–4. Carpels 3–4, 2–many-seeded.—Small more or less aquatic annual herbs, with opposite leaves, and small axillary (mostly white) flowers.

§ 1. *Parts of the flower* 3–4: *petals acuminate: hypogynous scales minute or none: carpels* 1–2-*seeded, often constricted in the middle.*—TILLÆA, DC.

1. *T. minima* (Miers): stems diffuse, branching; leaves minute, connate, oval-oblong; flowers verticillate and crowded in the axils of the leaves, on short pedicels; petals 4, acuminate, shorter than the calyx; carpels 1–2-seeded. *Hook. & Arn.*—"*Miers, Chil.* 2. *p.* 530"; *Hook. & Arn. bot. misc.* 3. *p.* 338. T. erecta, *Hook. & Arn. bot. Beechey*, *p.* 24.

St. Diego, California, *Nuttall!*—A few of the pedicels are elongated so as to exceed the leaves in length. Perhaps not different from T. rubescens, *H. B. & K.*

§ 2. *Parts of the flower* 4: *petals oval or oblong: hypogynous scales linear: carpels* 8–20-*seeded.*—BULLIARDA, DC.

2. *T. simplex* (Nutt.): stem erect or ascending, generally simple, rooting at the base; leaves linear-oblong, acutish or rather obtuse, connate at the base; flowers solitary, nearly sessile; petals (greenish-white) and narrow carpels twice the length of the sepals.—*Nutt.! in jour. acad. Philad.* 1. *p.* 114, *& gen. appx.*; *DC.! prodr.* 3. *p.* 381. T. ascendens, *Eaton.*

Muddy banks of rivers, near New Haven, Connecticut! and Philadelphia! July–Sept.—Stems 1–3 inches high. Leaves 2–3 lines long, at length shorter than the internodes. Flowers the size of a small pin's head. Carpels 8–10-seeded: styles none.—Near T. aquatica, *Linn.*, as Mr. Nuttall remarks: perhaps not distinct.

3. *T. Drummondii:* stems diffuse, dichotomous; leaves oblong-linear, rather obtuse, somewhat connate; flowers nearly solitary, on pedicels at length as long as the leaves; petals (reddish) and obtuse carpels twice the length of the sepals.

Texas, *Drummond!* Feliciana, Louisiana, *Prof. Carpenter!* in damp prairies and along the margin of ponds. April.—Plant about an inch high, slightly succulent. Leaves longer and narrower than in T. Vaillantii. Carpels 12–20-seeded: styles almost none. Seeds oval.

4. *T. angustifolia* (Nutt.! mss.): "branching from the base, rooting; leaves linear, acute, connate; flowers axillary, nearly solitary, on very short pedicels; segments of the calyx 4, ovate, about half the length of the ovate obtuse petals; carpels broad, obtuse, many-seeded.

"Muddy banks of the Oregon and Wahlamet.—Plant 1–2 inches high. Styles none: stigma minute. Petals as long as the carpels. Seeds small, linear-oblong." *Nuttall.*

2. SEDUM. *Linn.; Gærtn. fr. t.* 65; *DC. prodr.* 3. *p.* 401, *& mem. t.* 4–9.

Sedum & Rhodiola, *Linn.*

Sepals commonly 5, more or less united at the base, usually turgid. Petals distinct, mostly spreading. Stamens twice the number of the petals. Carpels as many as the sepals, many-seeded, with an entire scale at the base of each.—Herbs or rarely suffrutescent plants, mostly branching from the base. Leaves alternate or scattered, sometimes opposite or verticillate, usually crowded on the sterile branches. Flowers cymose, sometimes with 4 or 6–7 sepals and petals, and consequently 8 or 12–14 stamens.

* *Leaves flat.*

1. *S. Rhodiola* (DC.): glabrous; leaves oblong, serrate, or sometimes almost entire; root tuberous; stem simple; flowers (yellow) in a crowded and nearly sessile corymbose cyme, mostly tetramerous and by abortion diœcious.—*DC.! fl. Fran., & pl. grass. t.* 143; *Torr.! in ann. lyc. New York*, 2. *p.* 206; *Hook.! fl. Bor.-Am.* 1. *p.* 227. Rhodiola rosea, *Linn.! spec.* 2. *p.* 1035; *Engl. bot. t.* 508. R. odorata, *Lam. ill. t.* 819.

Arctic America, from Greenland! to Kotzebue's Sound! Newfoundland! and on the Rocky Mountains to lat. 41°, *Dr. James!*—♃ Flowers small. The root exhales the odor of the rose.

2. *S. telephioides* (Michx.): leaves ovate or oval, attenuate at the base, somewhat toothed, glabrous; stem erect; cymes paniculate-corymbose, dense; stamens 10, scarcely exceeding the ovate-lanceolate (pale purple) petals.—*Michx.! fl.* 1. *p.* 277; *Pursh, fl.* 1. *p.* 324; *Nutt.! gen.* 1. *p.* 293; *DC. prodr.* 3. *p.* 402.

On rocks in the mountainous region of the Southern States! Harper's Ferry, Virginia, and near the Great Falls of the Potomac, *Mr. Rich!* Rocky hills near Sparta, New Jersey, *Nuttall.* Shore of Seneca Lake, New York, *Mr. Hall.* Limestone cliffs near Utica, Indiana, *Dr. Clapp!* June–Aug.—♃ Stem a foot high. Leaves 1–2 inches long.—Closely resembles S. Telephium (the common *Orpine* or *Live-for-ever* of the gardens), which is beginning to be naturalized in a few places.

[illegible]

3. *S. sparsiflorum* (Nutt.! mss.): "glabrous, branched from the base, erect or decumbent; leaves all scattered, oblong, small; cyme compound; the flowers sessile, scattered along the circinate branches, mostly decandrous; petals (yellow) lanceolate, acute, rather longer than the ovate sepals; styles short.

Plains of Red River, Arkansas, *Nuttall! Dr. James! Dr. Pitcher! Dr. Leavenworth!* Texas, *Drummond!* May.— ① Stems 2–4 inches high. Leaves about 2 lines long. Flowers small.

4. *S. spathulifolium* (Hook.): glabrous, glaucous or pulverulent; leaves broadly spatulate, obtuse; the uppermost small; stems decumbent at the base; cyme compound; flowers slightly pedicellate, decandrous; petals (yellow) linear-lanceolate, acute, much longer than the calyx, scarcely exceeding the stamens.—*Hook. fl. Bor.-Am.* 1. *p.* 227.

Oregon, on rocks, *Douglas, Nuttall!* May.—♃ Stems about 6 inches high. Flowers rather large.

5. *S. Oreganum* (Nutt.! mss.): "glabrous, not glaucous; leaves all scattered, spatulate, rounded at the summit; stems erect, simple; cyme compound; the flowers on very short pedicels, decandrous; petals (pale rose-color) linear-lanceolate, much acuminate, 3–4 times the length of the ovate-lanceolate acuminate sepals, and about twice the length of the stamens."

Rocks, near the mouth of the Oregon, *Nuttall!*—♃ Petals more than half an inch long.

6. *S. ternatum* (Michx.): leaves glabrous, entire; the lower ones ternately verticillate, broadly cuneiform-obovate, attenuate at the base; the uppermost scattered, oval or lanceolate, sessile; stems low, creeping at the base, assurgent; cyme 3-spiked, with the flowers unilateral and octandrous, sessile, about the length of the leafy bracts; the solitary central flower decandrous; stamens shorter than the linear-lanceolate acute (white) petals.—*Michx.! fl.* 1. *p.* 277; *Pursh, l. c.; Ell. sk.* 1. *p.* 529; *Torr.! fl.* 1. *p.* 463; *Bot. mag. t.* 1977; *Bot. reg. t.* 142; *DC.! prodr.* 3. *p.* 403; *Darlingt. fl. Cest. p.* 482. S. annuum, &c. *Gronov.! fl. Virg. ed.* 2. *p.* 71. S. portulacoides, *Muhl.! in Willd. enum.* 1. *p.* 484.

Rocky banks of streams, Upper Canada! and Pennsylvania! to the mountains of Georgia, and throughout the Western States! May–June.—♃ Stems branching from the base, 3–8 inches long. Branches of the cyme spreading or recurved, loosely flowered. Sepals linear-oblong, obtuse. Anthers purplish-brown.—*Stone-crop.*

7. *S. pulchellum* (Michx.): leaves glabrous, linear, obtuse, flattish, closely sessile and more or less auriculate at the base, very numerous, scattered; stems assurgent, often branching from the base; cyme of several umbellate spikes, which are spreading or recurved in flower, but straight and rather erect in fruit; the flowers crowded, closely sessile, unilateral, somewhat exceeding the linear bracts, octandrous; the solitary central one commonly decandrous; petals (pale purple or rose-color) lanceolate, acute, about twice the length of the lanceolate obtuse sepals.—*Michx.! fl.* 1. *p.* 277; *Muhl.! cat. p.* 46; *Nutt. gen.* 1. *p.* 292? S. pulchrum, *DC. l. c.*

β. flowers rather larger; petals pale rose-color or nearly white.—S. linifolium, *Nutt.! mss.*

On rocks, in the mountainous portions of Virginia! to Georgia! and west to Kentucky! Tennessee! Arkansas! and Texas! *β.* Arkansas, *Nuttall!* May–June.—♃? or ① Stems 4–12 inches long. Branches of the cyme rarely somewhat scattered. Anthers brown. Styles slender.

8. *S. Douglasii* (Hook.): glabrous; leaves linear-subulate, crowded, very acute, flat on the upper side, carinate below, with membranaceous margins

when dry; stem erect, often with proliferous shoots; cyme dichotomous; flowers sessile, decandrous; petals narrowly lanceolate, twice the length of the calyx.—*Hook. fl. Bor.-Am.* 1. *p.* 228.

Oregon, on rocks, *Douglas*, *Nuttall!*— ① Stems a span high. Leaves with scarious margins towards the base, thickened in the middle.

* * *Leaves terete.*

9. *S. stenopetalum* (Pursh): glabrous, branching from the base; stems assurgent; leaves crowded, compressed-subulate, closely sessile, acute; cymes 2–3-chotomous; the flowers crowded on the short branches, nearly sessile, decandrous; petals linear, acute, much longer than the calyx.—*Pursh, fl.* 1. *p.* 234; *DC. prodr.* 3. *p.* 408; *Hook.! fl. Bor.-Am.* 1. *p.* 228. S. lanceolatum, *Torr.! in ann. lyc. New York*, 2. *p.* 205.

Along both sides of the Rocky Mountains. (*Lewis, Dr. James! Drummond! Nuttall!*)—♃ Stems 4–6 inches high. Leaves short. Flowers rather large, yellow.

10. *S. edule* (Nutt.! mss.): "cæspitose; leaves terete, subulate at the apex, dilated at the base, glaucous; scape paniculately branched above, the branches cymose; flowers nearly sessile, decandrous; petals lanceolate, acute, about twice the length of the lanceolate sepals.

"Edges of rocks and ravines, St. Diego, California.—♃ Scapes a foot high, with a few short and distant subulate leaves; the radical leaves 3–4 inches long, succulent. Flowers numerous, rather large. Scales at the base of the carpels none.—A remarkable species, allied apparently to Echeveria teretifolia, but with white flowers tinged with green, the petals wholly distinct, &c. The numerous scapes are gathered and eaten while young by the savages." *Nuttall.*

‡ *Doubtful Species.*

11. *S. hæmatodes* (Mill. dict.): stems erect, fleshy; leaves ovate, entire, the uppermost clasping; corymb terminal. *DC. prodr.* 3. *p.* 404.

Louisiana.—♃ Varies with white and purple flowers. *DC.*—Possibly S. telephioides.

3. ECHEVERIA. *DC. prodr.* 3. *p.* 401, *& mem. Crass. t.* 5 *&* 6.

Sepals 5, somewhat united at the base. Petals 5, erect, connivent, united below, carinate. Stamens 10, shorter than the petals. Carpels 5, many-seeded, tapering into subulate styles, with a short obtuse scale at the base of each.—Shrubby or herbaceous (Mexican and Californian) fleshy plants; the cauline leaves alternate or rosulate and somewhat opposite, entire. Flowers scarlet and yellow.

1. *E. cæspitosa* (DC.): leaves rosulate-crowded, obscurely opposite, tongue-shaped, very thick, glaucous; corymb panicled; the flowers nearly sessile along the branches. *DC. l. c.*—Cotyledon cæspitosa, *Haworth, misc. p.* 180. C. linguiformis, *Ait. Kew.* (*ed.* 2) 3. *p.* 109. Sedum Cotyledon, *Jacq. eclog.* 1. *t.* 17.

California.—♃ Flowers yellow.

2. *E. pulverulenta* (Nutt.! mss.): "leaves spatulate, acuminate, very pulverulent; those of the leafy stem gradually diminishing to bracts, broadly cordate, clasping; panicle dichotomous, fastigiate; the pedicels rather longer than the (pale scarlet) flowers; calyx about half the length of the connivent petals.

"St. Diego, California.—♃ ? Flowering the second year, in May. Stem 2–3 feet high, leafy. Pedicels nodding. Petals pale scarlet or coral-color. Carpels linear-lanceolate. Seeds numerous, subulate." *Nuttall.*

3. *E. lanceolata* (Nutt.! mss.): "rosulate radical leaves lanceolate, acuminate, a little pulverulent; stem scapiform, with small and distant clasping cordate leaves; panicle fastigiate, dichotomous; the flowers (red and yellow) on very short pedicels: segments of the calyx ovate, obtuse, much shorter than the petals.

"St. Diego, California, with the preceding.—♃ A smaller plant."

TRIBE II. DIAMORPHEÆ.

Carpels more or less united, dehiscent by the separation of the dorsal portion.

4. DIAMORPHA. *Nutt. gen.* 1. *p.* 293; *DC. prodr.* 3. *p.* 414, *& mem. Crass. t.* 1, *f.* 9.

Sepals 4, very short and obtuse, united at the base. Petals 4, oval, concave, inserted by a broad base. Stamens 8: filaments subulate, rather shorter than the petals: anthers roundish, purple. Scales at the base of the carpels minute, obcordate. Carpels 4, united below the middle, tapering into short styles, when old divergent above, not dehiscent by either suture, but by the vertical separation of the dorsal portion (nearly half) of each carpel in a valvular manner; the style remaining. Seeds 4–8.—A very small succulent biennial herb, branching from the base (2–4 inches high), with white flowers in small corymbose cymes, and alternate (oblong or oval) nearly terete leaves.

D. pusilla (Nutt.! l. c.)—Sedum pusillum, *Michx.! fl.* 1. *p.* 276. Tillæa ? cymosa, *Nutt. gen.* 1. *p.* 210.

On "Flat Rock," Camden, North (?) Carolina, *Michaux! Nuttall!* (*South* Carolina, *Elliott.*) Abundant on flat rocks in the upper part of Georgia, *Dr. Leavenworth!* March.—Mr. Nuttall obtained this little plant in winter, with only the persistent remains of the fruit of the former season; and from these specimens his description and the figure of De Candolle were taken; whence its remarkable dehiscence, so analogous to that of Penthorum, has escaped notice, as the valvular dorsal portion by which each carpel opens early falls away, when the dehiscence might readily be supposed to be simply loculicidal. The fine specimens of Dr. Leavenworth have enabled us to complete the history of this interesting genus.—The Sedum pusillum of Pursh, from the "banks of the Shenandoah River, Virginia," is doubtless S. pulchellum, as Mr. Nuttall has long ago remarked: Pursh's specimens of the latter plant, from that same locality, are still preserved in the late Prof. Barton's herbarium.

5. PENTHORUM. *Gronov. fl. Virg.*; *Linn.*; *Lam. ill. t.* 390.

Sepals 5, united at the base. Petals 5, or sometimes wanting. Stamens 10. Scales at the base of the carpels none? Carpels united into a 5-angled

5-celled capsule, with 5 diverging beaks, dehiscent by the separation of the beak with a part of the back of each carpel. Seeds numerous, minute.—Erect perennial (N. American and Chinese) herbs, not succulent, with alternate membranaceous and serrate leaves, and yellowish flowers, unilateral on the simple branches of the cyme.

1. *P. sedoides* (Linn.): stem somewhat branched, angular above; leaves lanceolate, acute at each end, almost sessile; branches of the cyme many-flowered; seeds scobiform, elliptical.—*Gronov.! l. c.; Linn. act. Ups.* (1774) *p.* 12, *t.* 2; *Michx.! fl.* 1. *p.* 278; *Pursh! fl.* 1. *p.* 328; *Torr.! fl.* 1. *p.* 463; *DC.! prodr.* 3. *p.* 414; *Darlingt. fl. Cest. p.* 281.
Ditches and wet places, Canada! to Georgia and Louisiana; common. July–Sept.—Flowers pale greenish-yellow, the petals often wanting.—*Virginia Stone-crop.*

ORDER LXVI. SAXIFRAGACEÆ. *Juss.*

Sepals 4–5 (very rarely fewer or more numerous) united or nearly distinct, imbricate or valvate in æstivation. Petals as many as the sepals and alternate with them. Stamens as many (very rarely fewer) or twice as many as the petals, rarely more numerous or indefinite, and inserted with them into the throat of the calyx: anthers introrse. Ovary either free from the calyx or coherent with its tube, of 2, or sometimes 3–5 or more carpels, which are either partially or completely united, 1-celled with parietal placentæ, or with as many cells as carpels and the placentæ in the axis: ovules mostly numerous: styles distinct or more or less united. Fruit capsular, with septicidal or rarely loculicidal dehiscence. Seeds anatropous, usually small and numerous. Embryo straight, in the axis of fleshy albumen, which it usually nearly equals in length: radicle cylindrical: cotyledons short.—Herbs or shrubs, with alternate or opposite (sometimes stipulate) leaves. Inflorescence various, often cymose.

SUBORDER I. SAXIFRAGEÆ. *DC.*

Æstivation of the petals imbricate. Capsule usually beaked with the distinct summits of the carpels, opening along the inner suture of each, or septicidal.—Herbs, with alternate or opposite leaves; the base of the petioles sometimes dilated and stipuliform.

1. LEPTARRHENA. *R. Br. in Parry's 1st voy. suppl. p.* 273; *Hook. fl. Bor.-Am.* 1. *p.* 256, *t.* 89.

Calyx campanulate, 5-parted, the base adherent to the ovary. Petals 5, entire. Stamens 10, inserted into the calyx-tube: filaments subulate:

anthers 1-celled, 2-valved. Ovary of 2 nearly distinct carpels, tapering into very short styles, dehiscent longitudinally within. Seeds numerous, ascending, scobiform; the testa loose, elongated and subulate at both ends, including the oval nucleus.—An herb, with somewhat the habit of Pyrola. Leaves coriaceous, persistent, obovate, serrate, crowded at the base of the nearly naked scape: petioles dilated and sheathing at the base. Flowers racemose-paniculate.

L. pyrolifolia (R. Brown! l. c.)—L. pyrolifolia & amplexifolia, *Seringe! in DC. prodr.* 4. *p.* 48. Saxifraga pyrolifolia, *Don! Saxifr. in Linn. trans.* 13. *p.* 389. S. amplexifolia, *Sternb. rev. Saxifr. suppl. p.* 2, *t.* 2.
N. W. Coast: Unalaschka, *Mr. Nelson! Chamisso!* Behring's Straits, *Menzies!* and on the west side of the Rocky Mountains in about lat. 52°, *Drummond, Douglas!* Also in Kamtschatka.—Stem short, ascending, mostly simple, clothed with the membranaceous sheathing bases of the petioles. Leaves elliptical-obovate, with oblique veins, very smooth and shining above, pale beneath. Scape 8–16 inches high, rigid, a little pubescent or glandular towards the summit. Flowers small. Petals linear, scarcely longer than the calyx, white.

2. SAXIFRAGA. *Linn.; R. Br. in Parry's 1st voy. suppl. p.* 273.

Calyx free, or coherent with the base of the ovary; the sepals 5, more or less united, imbricate in æstivation. Petals 5, inserted on the tube of the calyx, entire. Stamens 10, or very rarely 5: anthers 2-celled, opening longitudinally. Styles 2 (rarely 3, or even 4–6): stigmas slightly capitate or truncate. Capsule (adnate to the calyx below, or free) of 2, or sometimes more, more or less united (rarely almost distinct) carpels, 2-beaked, 2-celled below, many-seeded, opening by a roundish hole between the diverging beaks. Seeds smooth or rugose; the testa conformed to the nucleus.—Perennial (rarely annual) herbs. Radical leaves usually rosulate; the cauline mostly alternate. Peduncles 1–many-flowered.

§ 1. *Caudex perennial, leafy: leaves opposite, persistent, thickened towards the apex and punctate with* 1–3 *impressed dots or pores, the ciliæ not articulated: flowering stems annual, peduncle-like: sepals coherent to the middle, erect.*—Porphyrion, *Tausch.*

1. *S. oppositifolia* (Linn.): leaves of the sterile branches imbricated in 4 rows, or rarely remote, obovate, carinate, ciliate, obtuse or obliquely truncate at the apex, and generally perforated by 1–3 small pores; flowers solitary; calyx free from the ovary; stamens shorter than the large obovate (lilac-colored) 5-nerved petals; seeds rugose.—*Linn.! spec.* 1. *p.* 402, *& fl. Lapp. t.* 2, *f.* 1; *Fl. Dan. t.* 34; *Engl. bot. t.* 9; *Pursh! fl.* 1. *p.* 311; *Don! Saxifr. in Linn. trans.* 13. *p.* 400; *Seringe! in DC. prodr.* 4. *p.* 17; *Hook.! fl. Bor.-Am.* 1. *p.* 243. S. retusa, *Sternb. in Linnæa*, 6. *p.* 556. Antiphylla spathulata, *Haw. enum. Saxifr. p.* 45.
Newfoundland! Labrador! and the Island of Anticosti! to the shores of the Arctic Sea! west to the Rocky Mountains! (lat. 52°–56°) and to Kotzebue's Sound.—Plant purplish. Flowers occasionally white.

2. *S. Eschscholtzii* (Sternb.): small, densely cæspitose; leaves closely imbricated, obovate, concave, pectinately ciliate; flowers solitary on very short peduncles; petals (calyx, *Sternb.*) cochleate, ciliate. *Hook.*—*Sternb. rev. Saxifr. suppl. p.* 9, *t.* 10, *f.* 2; *Seringe, in DC. l. c.; Hook. fl. Bor.-Am.* 1. *p.* 243. S. fimbriata, *Don, Saxifr. l. c. p.* 404.

N. W. Coast, lat. 59°, *Mr. Nelson!* Behring's Straits, *Menzies*, and Arctic sea-shore west of Mackenzie River, *Capt. Franklin*, ex *Hook.*—Stems an inch high, silvery gray. Leaves somewhat 3-nerved.

§ 2. *Caudex perennial, leafy: leaves flat, mostly persistent, often bristly-ciliate, the margins not punctate nor cartilaginous: flowering stems annual, leafy: sepals united at the base, slightly coherent with the ovary.*—Hirculus, *Tausch.*

3. *S. Hirculus* (Linn.): stem 1–6-flowered; leaves lanceolate, nerved, not ciliate; pedicels hairy; sepals usually ciliate, obtuse, much shorter than the obovate many-nerved petals; styles very short; stigmas spatulate, at first inflexed, at length divaricate.—*Linn.; Engl. bot. t.* 1009; *Don, Saxifr. l. c. p.* 372; *R. Br.! in Parry's* 1*st voy. suppl. p.* 273; *Seringe! in DC. prodr.* 4. *p.* 45; *Hook.! fl. Bor.-Am.* 1. *p.* 252. S. propinqua, *R. Br. in Ross' voy.* (*ed.* 2) 2. *p.* 192.

Arctic Sea-shore and Islands, from Melville Island! to Behring's Straits! south to the Saskatchawan.—Flowers very large, yellow.

4. *S. flagellaris* (Willd.): glandularly pubescent; stem simple, leafy; stolons from the axils of the radical leaves very long and filiform, naked, bearing a rooting bud or leafy tuft at the extremity; leaves obovate-spatulate, ciliate, the radical and lower cauline ones much crowded, the uppermost oblong or linear; flowers large (yellow); calyx very glandular; petals persistent, longer than the capsule.—*Willd.* ex *Sternb. rev. Saxifr. p.* 25, *t.* 6; *R. Br.! in Parry's* 1*st voy. suppl. p.* 273; *Don, Saxifr. l. c. p.* 373; *Seringe! in DC. l. c.; Torr.! in ann. lyc. New York*, 2. *p.* 203; *Hook.! fl. Bor.-Am.* 1. *p.* 253, *t.* 87. S. setigera, *Pursh! fl.* 1. *p.* 312.

α. stem 1–5-flowered; sepals oblong; ovary nearly free. *Hook.*—S. flagellaris, *Willd. l. c.; Ledeb.! fl. Alt.* 2. *p.* 121, *& ic. pl. Ross.-Alt. t.* 321. S. aspera, *Bieberst.* S. myosotifolia, *Pall. in Spreng. syst.?* ex *Hook.*

β. stem about 1-flowered; calyx adhering to the base of the ovary; the segments ovate. *Hook.*—S. flagellaris, *R. Br. l. c.; Hook. & Arn. bot. Beechey, p.* 154.

Arctic America, from Greenland! Baffin's Bay, and Melville Island! to Kotzebue's Sound and the N. W. Coast! and on the Rocky Mountains to lat. 41°, *Dr. James!*—This singular plant is also found on the Caucasian Alps. S. stenopetala, *Royle*, and two or three other species of the Himalaya Mountains collected by Jacquemont, are allied to it.

5. *S. bronchialis* (Linn.): stems ascending, slender, producing short branchlets; leaves linear, rather coriaceous, finely ciliate, mucronate; flowers corymbose or solitary; peduncles long and weak; sepals lanceolate, rather acute; petals obovate-oblong, marked with numerous saffron-colored spots; styles and stigmas convergent during flowering. *Seringe.*—*Linn.; Pursh! fl.* 1. *p.* 310; *Sternb. rev. Saxifr. p.* 13, *t.* 10; *Don! Saxifr. l. c. p.* 376; *Seringe! in DC. l. c.; Torr.! in ann. lyc. New York*, 2. *p.* 204; *Hook. fl. Bor.-Am.* 1. *p.* 255.

N. W. Coast! and Rocky Mountains, at the Portage of the Oregon, *Drummond;* and to lat. 41°, *Dr. James!*—Flowers small, yellowish-white.

6. *S. tricuspidata* (Retz): stem strict, thick; lower leaves dense, oblong,

3-cuspidate, with cartilaginous points, the margins very slightly ciliate; flowers somewhat corymbose, the peduncles rather short and rigid; sepals ovate, somewhat coriaceous; petals obovate-oblong, not spotted [punctate with numerous dots in specimens, and according to *Pursh & Don*], longer than the calyx; capsule ovoid, apiculate with the conical diverging styles; stigmas somewhat capitate. *Seringe*.—"*Retz, prodr. fl. Scand.; Rottb. act. Hafn.* 10. *p.* 446, *t.* 6;" *Pursh! fl.* 1. *p.* 312; *Fl. Dan. t.* 976; *Don! Saxifr. l. c. p.* 440; *Seringe, in DC. prodr.* 4. *p.* 47; *Hook.! fl. Bor.-Am.* 1. *p.* 254.

β. smaller in all its parts. *Hook. l. c.*—S. Chamissoi, *Sternb. rev. Saxifr. suppl. p.* 12, *t.* 10.

Arctic and Subarctic America, from Greenland! and Hudson's Bay! to the N. W. Coast! south to Lake Winipeg, lat. 50°, ex *Hook*. *β*. Unalaschka, *Chamisso*; and on Mount Hood, *Douglas*, ex *Hook*.—Flowers large, white according to Pursh and Seringe; yellow according to Don.

7. *S. Pseudo-Burseriana* (Fischer! mss.): cæspitose, much branched from the base; sterile branches short and crowded; leaves flat, linear-spatulate, mucronate, strongly ciliate, densely imbricated; those of the flowering branches numerous, scattered; sepals nearly distinct, ovate, rather obtuse, glabrous, shorter than oval-obovate not unguiculate somewhat 3-nerved petals; ovary short; styles very short, stigmatic along the inside.

Unalaschka and Bay of St. Lawrence, *Chamisso*.—Stems 3–4 inches high. Leaves 2–3 lines in length, very densely imbricated on the sterile stems, coriaceous, obscurely 1-nerved, glabrous. Flowers few, small.—We know not whether any description of this species has been published: ours is drawn from a specimen collected in Kamtschatka. It is enumerated among the plants of Chamisso's collection in the *Linnæa*, 6. *p.* 555.

8. *S. aizoides* (Linn.): stems cæspitose, leafy; leaves linear, more or less ciliate, slightly mucronate, thick; flowers paniculate, sometimes solitary; sepals ovate; petals oblong, longer than the calyx, yellow or orange-color, often dotted; stigmas depressed; capsule rather thick, as long as the styles; seeds ovate-triquetrous, minutely rugose. *Seringe*.—*Smith, Engl. bot. t.* 39; *Wahl. fl. Lapp. p.* 115; *Pursh! fl.* 1. *p.* 312; *Don, Saxifr. l. c. p.* 376; *Seringe! in DC. prodr.* 4. *p.* 47; *Hook.! fl. Bor.-Am.* 1. *p.* 255. S. autumnalis, *Linn.! l. c.; Fl. Dan. t.* 72.

Arctic America! and from Greenland to Labrador! Newfoundland! and the Island of Anticosti. Alpine rivulets on the Rocky Mountains, *Drummond!*

§ 3. *Caudex perennial, leafy: leaves persistent, the margins not punctate nor cartilaginous: flowering stems annual, somewhat leafy: sepals united below and coherent with the base of the ovary: ciliæ of the leaves articulated.*—Dactyloides, *Tausch.*

9. *S. cæspitosa* (Linn.): cæspitose; leaves 3–5-cleft, the uppermost linear and entire, glandularly pubescent; the segments broadly linear, obtuse, not pointed; flowering stems with a few scattered leaves, glandular, 1–4-flowered; tube of the calyx adherent to the ovary; petals obovate, 3-nerved, twice the length of the calyx. *Hook.! fl. Bor.-Am.* 1. *p.* 244.

α. stems 2–3-flowered. *Hook.! l. c.*—S. cæspitosa, *Linn*; *Don, Saxifr. l. c.; Pursh! fl.* 1. *p.* 312; *Wahl. fl. Lapp. p.* 119. S. Grœnlandica, *Linn.; Seringe, in DC. prodr.* 4. *p.* 27.

β. stems 1-flowered. *Hook. l. c.*—S. uniflora, *R. Br. in Parry's* 1*st voy. suppl. p.* 274. S. cæspitosa, *Engl. bot. t.* 764; *Seringe, l. c.* S. venosa, *Haw. enum. Saxifr. p.* 28.

Arctic America! from Greenland to Kotzebue's Sound. *β.* Arctic Islands.—Flowers white, rather large.

10. *S. exarata* (Villars): cæspitose; leaves 3–5-cleft, the uppermost linear and entire, glandularly pubescent; segments linear, rather acute; flowering stems slender, with a few scattered leaves, 3–5-flowered; flowers (small, white) in corymbose racemes; tube of the calyx adherent to the ovary; petals obovate, 3-nerved, scarcely twice the length of the calyx. *Hook.—Vill. Dauph.* 3. *p.* 674, *t.* 4; *Don, l. c.*; *Seringe! in DC. prodr. l. c.* S. nervosa, *Lapeyr. Saxifr. t.* 39. S. pubescens, *Sternb. in Linnæa,* 6. *p.* 556?
Rocky Mountains between lat. 52° & 56°, *Drummond!*

11. *S. sileniflora* (Sternb.): stems cæspitose, sometimes producing short stolons; leaves in dense rosulate tufts, rigid, shining as if varnished, many-nerved, puberulent, 3–7-cleft; the segments linear, rather acute; flowering stems elongated, glandularly puberulent, paniculate at the summit, 2–3-flowered; flowers rather large (white); tube of the calyx glandularly puberulent, adherent to the ovary; the segments much shorter than the obovate 3-nerved petals.—*Sternb.! in Linnæa,* 6. *p.* 567; *Cham.! l. c.*; *Hook.! fl. Bor-Am.* 1. *p.* 245. S. hypnoides *β.* condensata (in part) *Seringe?*
β. uniflora (Hook.! l. c.): stems elongated, 1-flowered.—S. cæspitosa *β.* uniflora, *Hook. & Arn.! bot. Beechey, p.* 123.
γ. minor (Presl! mss.): stems very short, 2–3-flowered.
Unalaschka and Bay of Eschscholtz, *Chamisso!* Behring's Straits, *Menzies. β.* Kotzebue's Sound! *γ.* Unalaschka, *Hænke!*—Flowering stems strict, about 5 inches high, nearly naked, or with a few very small leaves; the uppermost simple, the lower ones 3–4-cleft. Seeds oblong, faintly striate, the striæ minutely papillose.

§ 4. *Caudex perennial, leafy: leaves persistent, the margins cartilaginous and with a line of impressed dots: flowering stems annual, the leaves alternate: sepals coherent at the base, adherent to the base of the ovary: filaments subulate.*—Aizoonia, *Tausch.*

12. *S. Aizoon* (Jacq.): peduncles and calyx viscid with glandular hairs; leaves rosulate, spatulate, obtuse, with white cartilaginous teeth; flowers corymbose-paniculate; segments of the calyx broad, as long as the hemispherical tube; petals obovate, contiguous, usually spotted with red or yellow at the base; styles divergent, longer than the calyx; seeds ovate-triquetrous, rugose-punctate. *Seringe.—Jacq. fl. Austr.* 5. *t.* 438; *Pursh, fl.* 1. *p.* 310; *Sternb. rev. Saxifr. t.* 3; *Don, l. c.*; *Seringe! in DC. l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 243. Chondrosea Aizoon, *Haw.*
Greenland, Labrador! & Nova Scotia to the Saskatchawan, *Richardson! &c.* Also on shady moist rocks, southern shore of Lake Superior, *Dr. Pitcher!* July.—Stems 5–10 inches high. Cauline leaves few and short, obovate. Flowers white.

13. *S. serpyllifolia* (Pursh): shoots creeping; leaves rosulate, imbricated, somewhat reflexed, oblong, obtuse, coriaceous, very smooth, attenuated into a petiole; stem filiform, few-leaved, glandularly pubescent, one-flowered; calyx not adherent to the ovary, the segments obtuse; petals broadly obovate, about 3-nerved. *Hook.—Pursh! fl.* 1. *p.* 310; *Don! Saxifr. l. c. p.* 405; *DC. l. c.*; *Hook. fl. Bor.-Am.* 1. *p.* 243. S. Fischeri, *Seringe! in DC. prodr.* 4. *p.* 22. S. planifolia, *Sternb. in Linnæa,* 6. *p.* 555, ex *Cham.*
N. W. Coast, at Cape Newnham, *Nelson!* and Behring's Straits, *Menzies.* Unalaschka and Island of St. Lawrence, *Chamisso!*—"A singular

and well marked species, evidently allied to S. diapensioides and S. cæsia, wanting, however, altogether the remarkable glaucous incrustation of these species and being destitute of pores." *Hook.*—Flowering stems about 2 inches high. Flower large, apparently yellow. Petals much longer than the calyx, 3–6-nerved, not unguiculate. Filaments subulate filiform. Styles very short.

§ 5. *Caudex perennial, leafy, commonly subterranean: leaves sometimes persistent: stem (scape) annual, mostly leafless: calyx nearly free from the ovary; the sepals almost distinct, reflexed: filaments dilated upwards or clavate.*—Hydatica, *Tausch.*

14. *S. Tolmæi:* stems prostrate, diffusely branching; leaves spatulate, subsessile, coriaceous, nerveless, the margins (not cartilaginous) revolute; those of the creeping shoots scattered; those of the short flower-bearing branches imbricated and partly reflexed; flowering stems (peduncles) nearly naked, somewhat glandular, 1–3-flowered; calyx deeply parted, nearly free from the ovary; the segments ovate, obtuse, shorter than the unguiculate about 1-nerved petals; filaments much inflated above; styles almost none.

North West Coast, *Mr. Tolmie!* (The specimen communicated by Sir Wm. Hooker.)—Stems branching and producing many creeping shoots, apparently forming cæspitose tufts. Leaves persistent, 3–4 lines long, obtuse, obscurely 1-nerved, nearly flat; the margin, especially toward the base, fringed with 1–3 long ciliæ on each side. Flowering stems about 3 inches high. Segments of the calyx 3-nerved. Petals ovate or lanceolate-oblong, 1-nerved, with one or two indistinct branches toward the apex, apparently white. Filaments short: anthers roundish. Carpels often (by accident) 3 or 4.—This apparently very distinct species has the same habit with S. serpyllifolia; but, in the structure of the flower, it accords with the section Hydatica, although different in appearance.

15. *S. spicata* (Don): somewhat pubescent; leaves radical, on long petioles, orbicular-cordate, coarsely and sharply serrate, the petiole dilated upwards; scape naked; raceme spicate, elongated, somewhat compound; ovaries free; calyx reflexed. *Hook.*—*Don! Saxifr. l. c. p.* 354; *Seringe, l. c; Hook. fl. Bor.-Am.* 1. *p.* 251. S. Geum, *Pursh! l. c.*, not of *Linn.*

Sledge Island, N. W. Coast, *Mr. Nelson.* Behring's Straits, *Menzies,* (v. sp. in *herb. Banks.*)

16. *S. æstivalis* (Fischer): pubescent with soft villous hairs, or nearly glabrous; leaves radical, on long petioles, roundish-reniform, or nearly orbicular, with a deep closed sinus, membranaceous, equally and deeply dentate with coarse and separate mostly acute and entire teeth, not margined; scape naked; the peduncles and pedicels glandular; bracts small, linear; petals oval, unguiculate, obtuse, thrice the length of the obtuse (ovate or ovate-oblong) reflexed segments of the calyx; a portion of the filaments often abortive or petaloid; ovaries distinct below the middle.

α. flowers in a loose panicle; pedicels slender.—S. æstivalis, *Fischer! in herb. DC. & Hook., & ind. sem. St. Petersb.* (1835) *p.* 37. S. foliis reniformibus, &c. *Gmel. fl. Sibir.* 4. *p.* 161, *t.* 65, *f.* 1. S. punctata, *Sternb. Saxifr. p.* 18, *& suppl. p.* 7, *t.* 4; *Ledeb.! fl. Alt.* 2. *p.* 118; *Hook. & Arn. bot. Beechey, p.* 114, *&* 124; *Hook.! fl. Bor.-Am.* 1. *p.* 251; not of *Linn.* S. gracilis, *Sternb. l. c. suppl. t.* 5, *f.* 1, fide *Hook.* S. arguta, *Don, Saxifr. l. c. p.* 356? S. hirsuta *β.* punctata, *Seringe, in DC. prodr.* 4. *p.* 42. S. semidodecandra, *Wormskiold,* fide *Fisch.* S. denudata, *Nutt.! mss.,* not of *Don.*

β. panicle contracted into an ovate thyrsus; pedicels rather short; petioles long and slender.—S. Nelsoniana, *Don! Saxifr. l. c. p.* 355.

γ. much smaller; stems creeping at the base; flowers nearly capitate.

δ. panicle diffuse; the branches 1-flowered at the summit, bulbiferous below; filaments partly or sometimes almost entirely sterile and petaloid; the teeth or lobes of the leaves either entire or 3-toothed at the apex.—S. heterantha, *Hook. l. c. p.* 252, *f.* 78, *B.*

North West Coast, from Kotzebue's Sound! to Unalaschka! and Sitcha! and on the Rocky Mountains! Also on the Blue Mountains of Oregon, *Nuttall!* β. & γ. Kotzebue's Sound! Rocky Mountains, between lat. 52° & 56°, *Drummond!* γ. Moist rocks of the Oregon, *Douglas*, ex *Hook. Nuttall! Mr. Tolmie!*—This species cannot be the original S. punctata of Linnæus (which is perhaps S. Davurica, *Willd.* as Fischer suggests), and probably is not the plant of the second edition of the Species Plantarum; and hence we have adopted the name long since proposed by Fischer, who was the first to rectify the synonymy. The name S. arguta, *Don*, has the priority, if we are correct in adducing it here; but of this there is some doubt. To the variety with compact inflorescence, we refer the S. Nelsoniana, *Don*, as well from the description, as on the authority of Fischer, who has labelled the specimen in the Banksian herbarium, "S. semidodecandra, *Wormskiold*," which he adduces as a synonym of his S. æstivalis. S. heterantha appears to be a bulbiferous variety of the same species.—Flowers small: petals 1-nerved, or occasionally with two indistinct branches. Styles very short.

17. *S. arguta* (Don): leaves roundish-reniform, incisely serrate, glabrous; petioles filiform; scape slender, smooth; segments of the calyx oblong, acute.—*Don, Saxifr. l. c. p.* 356; *Seringe, l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 252.

N. W. Coast, *Menzies*.—Panicle very simple. Flowers white, the size of those of S. stellaris. Segments of the calyx oblong, acute. Petals oval, unguiculate, many-nerved. Pistils very short, *Don.*—Probably S. æstivalis.

18. *S. nudicaulis* (Don): leaves reniform, palmate, glabrous; flowers paniculate; segments of the calyx acute; scape naked.—*Don, Saxifr. l. c. p.* 366; *Seringe, l. c.; Hook. l. c.*

N. W. Coast, *Mr. Nelson.*—Scape 4–5 inches high, nearly glabrous. Lobes of the leaves ovate, mucronate. Flowers as large as in S. rivularis, white. Calyx and pedicels clothed with glandular hairs. Petals small, obovate, 3-nerved, a little longer than the calyx.

19. *S. Mertensiana* (Bongard): scape nearly naked; leaves roundish, incisely somewhat lobed; the lobes slightly 3-toothed; peduncles glandularly pubescent; sepals ovate, rather acute; petals ovate, acute, with very short claws, 3-nerved.—*Bongard, veg. Sitcha, l. c. p.* 141.

Sitcha.—Leaves cordate at the base, and cuneately decurrent into the petiole, 1½–2 inches broad. Scape simple, about a foot high. Flowers panicled: pedicels filiform. Ovary ovate, about the length of the styles. *Bongard.*

20. *S. neglecta* (Bray): stems numerous, filiform, glabrous, nearly leafless; radical leaves on long petioles, cuneiform at the base, deeply toothed at the apex, glabrous; bracts linear, obtuse, minute; sepals lanceolate-ovate; petals lanceolate, scarcely longer than the calyx. *Seringe.*—*Bray, ex Sternb. rev. Saxifr. suppl.* 1. *p.* 9, *t.* 6, *f.* 1; *DC. prodr.* 4. *p.* 43; *Cham. in Linnæa*, 6. *p.* 556.

Bay of St. Lawrence, *Chamisso.*—Flowers small, white.

21. *S. reflexa* (Hook.): canescently pubescent; leaves ovate, rather coriaceous, opaque, incisely serrate, attenuate into a petiole; scape naked; pani-

cle glabrous, compact, corymbose; petals obovate, marked with two orange spots, scarcely twice the length of the obtuse reflexed calyx-segments; filaments dilated or petaloid, often abortive; ovary free.—*Hook. fl. Bor.-Am.* 1. *p.* 249, *t.* 85.

Shores of the Arctic Sea between the Mackenzie and Coppermine Rivers, *Richardson.*—"Together with the harsh and rigid foliage of S. nivalis, the present species has a panicle more resembling that of S. vernalis; but the petals have two orange spots similar to those of S. leucanthemifolia, and the free calyx is at all times remarkably reflexed. *Hook.*

22. *S. Davurica* (Willd.): very glabrous; leaves cuneate-flabelliform, decurrent into a petiole, deeply incisely toothed, entire towards the base; scapes leafless, loosely panicled, bracteate; bracts linear, entire; petals obovate, bipunctate, nearly twice the length of the reflexed calyx-segments; filaments often petaloid. *Hook.*—*Willd. spec.* 2. *p.* 645; *Don, Saxifr. l. c. p.* 388; *Sternb. rev. Saxifr. suppl. t.* 5, *f.* 2; *Hook. fl. Bor.-Am.* 1. *p.* 250. S. punctata (Davurica, an punctata?) *Pall. it.* 3. *appx. no.* 91, *t. P. f.* 2.

Behring's Straits, &c. *Menzies, Chamisso, Capt. Beechey.* Alpine rivulets of the Rocky Mountains, between lat. 52° & 56°, *Drummond!*—This and the preceding belong to the section Hydatica, rather than to Micranthes. The lamina of the leaf is sometimes shorter (as in the figure of Pallas), but often longer than the petiole, and in our specimen the ovaries are 3 or even 4 in number.

23. *S. flabellifolia* (R. Brown! mss.): "ovaries 3–6, superior; leaves dilated-cuneiform, longer than the petiole, serrate-incised beyond the middle; scape naked, or with a single leaf nearly similar to the radical ones; flowers corymbose.

"Unalaschka, *Mr. D. Nelson.* [v. sp. in *herb. Banks.*]—Radical leaves numerous, often rather broader than long, nearly glabrous. Scape scarcely a span high, pubescent, somewhat woolly at the apex; the corymb scarcely divided. Stamens 10. Petals oblong, with short claws, exceeding the glabrous calyx." *R. Br.*—The description has been obligingly communicated by Mr. Brown. We are uncertain respecting its proper station in the genus, but suspect it is nearly allied to the preceding species, in which we observe 3–4 ovaries.

24. *S. Wolleana:* leaves all radical, membranaceous (veiny) oblong, tapering at the base into a short winged petiole, sinuate-toothed, ciliate; scape striate, viscous-pubescent above; branches of the panicle rather loosely-flowered, from the axils of leaflike bracts; pedicels slender; sepals nearly distinct, glabrous, ovate, obtuse, 3–nerved, reflexed, free from the ovary, about the length of the oval obtuse petals; styles none.

On a mountain near Bethlehem, Pennsylvania, *Mr. Wolle!* (in wet places?)—Root fibrous. Leaves 8 inches or more in length, thin and membranaceous, mostly obtuse, coarsely toothed; the teeth near the apex repand, the others somewhat sinuate. Scape rather slender, 12–18 inches high: the lower branches of the panicle from the axils of obovate foliaceous bracts. Petals (small) white with a yellowish spot near the base, slightly unguiculate, obtuse at each end, with a central nerve, from near the middle of which two indistinct lateral ones arise. Filaments shorter than the petals, usually much dilated upwards, acute at the apex: anthers roundish, yellow. Stigmas minute, sessile.—This plant cannot be the S. erosa of Pursh (which is doubtless nearly allied to S. Pennsylvanica), nor probably of Don, and certainly not of Seringe. It has somewhat the habit of S. Pennsylvanica; but the flowers are those of the present section.

§ 6. *Caudex above the ground scarcely any: stem (scape) annual, mostly leafless: calyx free from the ovary; the sepals nearly distinct, reflexed: petals with slender claws, often unequal: filaments filiform: seeds longitudinally striate.*—Arabidia, *Tausch.*

25. S. *stellaris* (Linn.): leaves rosulate or a little scattered, obovate-cuneiform, almost sessile, dentate-serrate at the apex; scape corymbose at the summit; calyx free, reflexed; petals spreading, lanceolate, all attenuate into a claw. *Koch.*—*Linn.! spec.* 1. *p.* 400; *Pursh, fl.* 1. *p.* 310; *Engl. bot. t.* 167; *Seringe! in DC. prodr.* 4. *p.* 40; *Hook. fl. Bor.-Am.* 1. *p.* 250; *Koch, fl. Germ. & Helv. p.* 271.

Greenland and Labrador! Also in Canada according to Pursh: but this is doubtful.—Peduncles filiform, ascending, a little hairy. Petals white, with 2 yellowish spots near the base. Seeds marked with indistinct elevated toothed striæ. Mt. Katahdin, Maine.

26. S. *foliolosa* (R. Br.): radical leaves cuneiform, slightly toothed; scapes divided; the branches 1–flowered at the summit, and at their base clothed with a cluster of minute fascicled leaves; calyx inferior, obovate; limb of the petals cordate-lanceolate. *R. Br.! in Parry's 1st voy. suppl. p.* 275; *Hook.! in Parry's 2nd voy. suppl. p.* 13, *& fl. Bor.-Am.* 1. *p.* 251. S. stellaris γ. *Linn. fl. Lapp.* (*ed. Smith*) *p.* 144, *t.* 2, *f.* 3, ex *R. Br.* S. stellaris β. comosa, *Willd.*; *Seringe in DC. l. c.*

Arctic Islands, *Capt. Parry! &c.*—Seems to be distinct from S. stellaris (which has not been found in Melville Island) by the dense clusters of little leaves on the scapes, the flowers very few (or none), the obovate calyx, and particularly by the lamina of the equal petals being cordate at the base. *R. Br.*

27. S. *leucanthemifolia* (Lapeyr.?): more or less viscidly pubescent; leaves radical, oblong-cuneiform, attenuate into a petiole, incisely toothed; scape corymbose or panicled, many-flowered, the pedicels capillary; calyx free, reflexed; petals spreading, unequal, unguiculate; the three larger ones cordate-lanceolate or abrupt at the base, marked with two yellow spots; the two smaller lanceolate, attenuate at the base, not spotted; seeds marked with regular crested striæ.

α. villous with viscous hairs; leaves spatulate, attenuate into a long margined petiole, coarsely and very sharply toothed; scape more or less leafy; panicle very much branched, diffuse.—S. leucanthemifolia, *Michx.! fl.* 1. *p.* 268; *Pursh! fl.* 1. *p.* 311; *Ell. sk.* 1. *p.* 512.

β. leaves less coarsely toothed; scape naked.—S. leucanthemifolia, *Hook.! fl. Bor.-Am.* 1. *p.* 250, *& bot. mag. t.* 2959. S. ferruginea, *Graham, in Edinb. phil. jour. July,* 1828, ex *Hook.*

γ. leaves linear-spatulate, toothed at the apex only; scape naked.

δ. leaves much shorter, incisely serrate-toothed, scarcely petioled; scape naked, many-flowered, smoothish.—S. stellaris β Brunoniana, *Bongard! veg. Sitcha, p.* 140. S. Nootkana, *Moçino, ic. ined.? in DC.*

On the mountains of North Carolina! and Georgia (α.) June–Sept.—β. Rocky Mountains, Oregon! and N. W. Coast! γ. Norfolk Sound, *Eschscholtz!* δ. Sitcha, *Bongard!* Norfolk Sound; *Eschscholtz!*—The plant of the mountains of N. Carolina is from 12–20 inches high, with a large very diffuse panicle, continuing to flower through the summer: the leaves are deeply and pectinately toothed. The Oregon plant we believe to be the same species, but the leaves are less deeply toothed and the panicle is more corymbose in all the specimens we have seen. It passes by several gradations into our var. δ. which is scarcely different from S. foliolosa, *R. Br.*; a species which will perhaps prove to be an arctic variety of the present, rather than of S. stellaris. We have not been able to compare the American plant with the European S. leucanthemifolia (S. Clusii, *Gouan.*), which appears from the description to be the same.

§ 7. *Caudex above the ground none: stem (scape) annual, leafless: flowers small, glomerate or cymose: calyx adherent to the ovary at the base: petals scarcely unguiculate: filaments short, subulate.*—Micranthes, *Tausch.*

28. *S. nivalis* (Linn.): leaves ovate or obovate, coriaceous, crenate, attenuate into a broad petiole; scape naked; flowers capitate, sessile; the capitulum sometimes branched; ovary half inferior; segments of the calyx erect, obtuse; petals persistent, obovate, scarcely twice the length of the calyx. *Hook.*

α. flowers in a dense head. *Hook.*—S. nivalis, *Linn.! spec.* 1. *p.* 401 (excl. syn. *Gronov.!*); *Engl. bot. t.* 440; *Pursh, fl.* 1. *p.* 310; *R. Br.! in Parry's 2nd voy. suppl. p.* 275; *Seringe! in DC. prodr.* 4. *p.* 38; *Hook.! fl. Bor.-Am.* 1. *p.* 248.

β. heads loose, branched. *Hook. fl. Bor.-Am. l. c.*

Arctic America, from Greenland! Labrador and Melville Island! to Unalaschka. Also on the Rocky Mountains (*Drummond*) to lat. 41°, *Dr. James!* Canada, *Pursh.*—Hooker remarks that the American specimens often approach so closely to some of the varieties of the succeeding species that it is difficult to distinguish them. Flowers white. Capsules deep purple.

29. *S. Virginiensis* (Michx.): leaves oblong or ovate, or spatulate-obovate, thickish but scarcely coriaceous, crenately toothed, attenuate into a broad petiole; scape mostly naked, paniculately branched at the summit; flowers in dense, or at length open, cymose clusters; calyx adhering to the base of the ovary only; the segments erect, obtuse, not half the length of the oblong obtuse petals; carpels (purple) united at the base only, at length divaricate.—*Michx.! fl.* 1. *p.* 269; *Pursh, fl.* 1. *p.* 310; *Don, Saxifr. l. c. p.* 386; *Ell. sk.* 1. *p.* 311; *Torr.! fl.* 1. *p.* 444; *Hook. fl. Bor.-Am.* 1. *p.* 248; *Darlingt. fl. Cest. p.* 270. S. Virginica, *Pers.*; *Nutt. gen.* 1. *p.* 285. S. vernalis, *Willd.! hort. Berol. t.* 43; *Bigel. fl. Bost. ed.* 2. *p.* 177; *Hook.! l. c.* S. nivalis, *Muhl. cat.!* P. elongata, *Sternb. Saxifr. p.* 9. *t.* 4.

On rocks and dry hills, Canada! to the Mountains of Georgia: west to the Mississippi. Also on the Saskatchawan, *Richardson!* and along the Oregon River, *Douglas*, ex *Hook.* April–June.—Scape 4–12 inches high, viscous-pubescent or a little glandular. Bracts linear, the lower ones sometimes leaf-like. Petals white, sometimes, as well as the calyx-segments, tipped with purple.—We perceive no essential difference between the S. Virginiensis & S. vernalis of Hooker. When the plant commences to flower, the cymose clusters are short and dense; but in their farther developement these clusters assume that form of centrifugal inflorescence which we perceive in Penthorum sedoides and other Crassulaceæ, as also in Hypericum angulosum (See p. 164 of this volume). We have sometimes observed a 6-cleft calyx, 6 petals, and 12 stamens.

30. *S. Pennsylvanica* (Linn.): leaves oblanceolate or oval, attenuate into a short margined petiole, obsoletely denticulate, slightly pubescent; scape naked, striate, viscous-pubescent; cymes in a large oblong panicle, at length rather loose; the flowers pedicellate; segments of the calyx triangular-lanceolate, recurved, scarcely as long as the linear-lanceolate 1-nerved petals; the tube adherent to the base of the ovary only; stigmas globose, subsessile; ovary at first depressed; carpels at length distinct above, divergent.—*Linn.! spec.* 1. *p.* 399 (excl. syn. *Pluk.*); *Michx.! fl.* 1. *p.* 269; *Pursh! fl.* 1 *p.* 211; *Don! Saxifr. l. c. p.* 384; *Torr.! fl.* 1. *p.*

444; *Bigel.! fl. Bost. ed.* 2. *p.* 177; *Seringe! in DC. l. c.*; *Hook. fl. Bor.-Am.* 1. *p.* 249; *Darlingt. fl. Cest. p.* 270. S. Pennsylvanica, floribus muscosis &c. *Dill. Elth. t.* 253, *f.* 328. S. semipubescens, *Don. l. c.?* Micranthes Pennsylvanica, M. hieracifolia, & M. semipubescens? *Haw. enum. Saxifr. l. c.*

α. cymes dense, the flowers at first conglomerate.

β. cymes loose, forming an open panicle.

In bogs, Canada! and Northern States! to Virginia! and Ohio. May.—Leaves 4–8 inches long, rather membranaceous, pale green, slightly ciliate. Scape sometimes weak, about 2 feet high, but commonly stout and at length 3–4 feet high. Flowers small, greenish; the petals yellowish: anthers purplish-orange color.

31. *S. erosa* (Pursh): nearly glabrous; leaves oblong-lanceolate, acute, erosely-toothed; stem naked; panicle oblong, with divaricate loosely-flowered branches; pedicels filiform.—*Pursh, fl.* 1. *p.* 311; *Don, Saxifr. l. c. p.* 360?

"In stony rivulets on the high mountains of Virginia and Carolina. June–July.—Resembles the foregoing (S. Pennsylvanica) in some respects very much." *Pursh.*—We have seen a mere fragment of Pursh's plant in the herbarium of the late Prof. Barton, and a still more imperfect specimen in Mr. Lambert's herbarium, from which it appears that the species is much more allied to S. Pennsylvanica than to any other; but we greatly doubt whether the cultivated plant described by Don, (or by Seringe in De Candolle's Prodromus) is the same with that of Pursh. Hence we have retained the original phrase of the latter author, and leave the species for farther observation.

32. *S. hieracifolia* (Waldst. & Kit.): scape strict, a little hairy; leaves petioled, obovate-spatulate, repandly-toothed, ciliate, coriaceous; flowers spicate, subsessile; lobes of the calyx ovate, broad, as long as the tube; petals ovate (reddish), marcescent, scarcely as long as the calyx; filaments purple; capsules prominent, purple; carpels divaricate at the apex; styles very short; stigmas somewhat hemispherical. *Seringe.*—"*Waldst. & Kit. pl. rar. Hung.* 1. *p.* 17, *t.*18"; *Sternb. rev. Saxifr. p.* 9, *& suppl. p.* 5; *Don, Saxifr. l. c. p.* 383; *Seringe, in DC. prodr.* 4. *p.* 38. S. plantaginifolia, *Hook.! in Parry's 2nd voy. suppl. p.* 394.

Arctic America, from Greenland and the Arctic Islands! to Kotzebue's Sound! and the Bay of Eschscholtz.—It appears, as Hooker remarks, exactly intermediate between S. Pennsylvanica and S. nivalis, more allied, however, to the former.

33. *S. integrifolia* (Hook.): very viscidly pubescent throughout; leaves all radical, ovate, very obtuse, entire, or very slightly sinuate-crenate, somewhat membranaceous (copiously reticulately veined); scape elongated, naked, paniculate at the apex; panicle loose, broad or contracted, bracteate; petals obovate, twice the length of the glabrous spreading or at length reflexed segments of the calyx; stamens short; ovary free; styles widely divergent. *Hook.! fl. Bor.-Am.* 1. *p.* 249, *t.* 86.

Near the mouth of the Oregon River, *Dr. Scouler! Mr. Tolmie! Nuttall!*—Caudex somewhat woody. Leaves short in proportion to the height of the plant. Scape 6–12 inches high, quite leafless. Primary branches of the panicle elongated, naked; the cymules either compact or quite loose.—Our specimens all differ from the above specific character, as copied from Hooker, in the quite veinless leaves: in this and every other respect they fully accord with his excellent figure; whence we conclude that the phrase "*copiose reticulatim venosis,*" was introduced by mistake.

§ 8. *Caudex above the ground none: stem annual, leafy: bracts at the base of the pedicels often geminate: calyx free, or adherent to the base of the ovary: the sepals erect or spreading: filaments subulate.*—Nephrophyllum, *Gaud.*; *Koch.*

34. *S. cernua* (Linn.): nearly glabrous, not glutinous; stem weak, simple or branching; lower leaves reniform, broadly toothed or lobed; the upper ones bearing little bulbs in their axils; flowers often solitary, terminal, pendulous; sepals oblong-lanceolate, nearly distinct; petals obovate-oblong, or obovate and retuse, longer than the calyx; styles imperfect, deformed. *Seringe.—Linn.! spec.* 1. *p.* 403, *& fl. Lapp. t.* 2, *f.* 4; *Engl. bot. t.* 664; *Wahl. fl. Lapp. p.* 116; *Don, Saxifr. l. c. p.* 364; *Seringe! in DC. prodr.* 4. *p.* 36; *R. Br.! in Parry's* 1*st voy. suppl. p.* 275; *Hook! fl. Bor.-Am.* 1. *p.* 245, *& bot. Beechey, p.* 124. (excl. β.)
Islands and shores of the Arctic Sea! from Greenland to Behring's Straits; and on the Rocky Mountains, (*Drummond*).—Flowers white.

35. *S. Sibirica* (Linn.): stem filiform, ascending, weak; radical leaves reniform, palmately 7-lobed, petiolate, a little hairy, the lobes ovate; those of the stem sessile; peduncles elongated, naked; segments of the calyx linear-ovate, striate, glabrous; petals cuneiform-obovate; styles shorter than the ovary. *Seringe.—Linn. spec.* (*ed.* 2) *p.* 577; *Sternb. rev. Saxifr. t.* 25; *Don, Saxifr. l. c. p.* 365; *Seringe, in DC. l. c.* S. cernua β. multiflora, *Hook. & Arn.! bot. Beechey, p.* 124, ex *Arn. mss.*
Labrador & Newfoundland, *Pursh.* Kotzebue's Sound, *Capt. Beechey!* —Flowers white.

36. *S. elegans* (Nutt.! mss.): "annual, glabrous; stem erect, with numerous slender branches, leafy; leaves (small) ovate or oval, 2–3-toothed; the lowermost roundish, on short petioles; the upper ones acute at the base, scarcely petioled; flowers paniculate, numerous; the peduncles slender, divaricate, naked; tube of the calyx about the length of the lanceolate-ovate segments, coherent with the base of the ovary; petals oblong (white with delicate red veins), sessile, more than twice the length of the calyx-segments; styles shorter than the ovary; seeds striate with scabrous ridges.
"On moist rocks by springs, on the banks of the Oregon below and near the Wahlamet, abundant. June–July.—A very elegant and distinct species, the stem about a span high, often branching nearly from the base, with numerous [rather small] flowers; the pedicels often nearly an inch long." *Nuttall.*—The leaves are only 3–4 lines in length; and tube of the calyx is in flower almost free from the ovaries, but is adherent when the fruit ripens.

37. *S. exilis* (Stephan): cæspitose; rootlets capillary; radical leaves palmately 5-lobed, petioled; cauline ones linear, entire; petals obovate-oblong, much longer than the 5-cleft calyx. *Seringe.—Stephan, in Sternb. rev. Saxifr. suppl. p.* 8, *t.* 3, *f.* 1; *DC. l. c.*; *Chamisso, in Linnæa,* 6. *p.* 556.
Island of St. Lawrence, Behring's Straits, &c. *Chamisso.* Kotzebue's Sound, *Fischer* (in *DC.*)—Stem weak, 1–2-flowered. Petals white. *Seringe.* —Hooker asks if this may not be a state of S. cernua.

38. *S. Laurentiana* (Seringe): stems numerous, from one root; radical leaves on long petioles, reniform, crenately 5–7-lobed, reticulately veined, glabrous; flowering stems and peduncles clothed with long intricate hairs; flowers few, somewhat capitate; bracts somewhat involucrate, 3–5-lobed;

segments of the calyx ovate, obtuse, shorter than the petals; petals 3-nerved towards the middle. *Seringe, in DC. prodr.* 4. *p.* 35. S. Chamissonis, *Sternb. ined.*

Island of St. Lawrence, *Chamisso.*

39. *S. rivularis* (Linn.): small; stems weak, ascending, 3–5-flowered; radical leaves somewhat reniform, crenately lobed, with the petioles dilated at the base; the cauline ones lanceolate, nearly entire; lobes of the calyx ovate, broad, as long as the tube or at length shorter; petals ovate, scarcely longer than the calyx; stigmas depressed-globose; capsule thick, much exceeding the calyx, crowned with the very short divergent styles. *Seringe.*—*Linn.! spec.* 1. *p.* 404, *& fl. Lapp. t.* 2, *f.* 1; *Engl. bot. t.* 2275; *Pursh! fl.* 1. *p.* 312; *Wahl. fl. Lapp. p.* 117; *Don, Saxifr. l. c. p.* 367; *Seringe! in DC. prodr.* 4. *p.* 36; *Hook.! l. c.*

β. hyperborea (Hook. l. c.): stem pubescent, 1–2-flowered.—S. hyperborea, *R. Br.! in Parry's* 1*st voy. suppl. p.* 274; *DC. l. c.*

Arctic America from Greenland and Labrador! to Kotzebue's Sound! Also in the Rocky Mountains, *Drummond!* and on the White Mountains of New Hampshire, *Mr. Oakes! β.* Melville Island, *Capt. Parry!*—Stems about 2 inches high. Flowers white, bracteate.

40. *S. Cymbalaria* (Linn.?): stems numerous, weak, few-flowered, pubescent and glandular above; leaves reniform, petioled, crenately lobed; flowers about 3; bracts half the length of the pedicels; sepals oblong; petals obovate, much longer than the calyx; styles approximate at the base, diverging at the summit. *Seringe, in DC. prodr.* 4. *p.* 44.

Chamisso's Island, and the Island of St. Lawrence, *Chamisso*, ex *Sternb.* (*Linnæa*, 6. *p.* 555.)—This is probably the same with the Siberian plant, of which we have specimens from the Russian botanists; but it can hardly be the S. Cymbalaria of Don (or of Linnæus?), a Grecian plant, which is said to have "Flores parvi, aurei, petalis acutis."

41. *S. petræa* (Linn.): annual, glandularly hairy; leaves fleshy, 3-lobed; the radical ones cordate, on rather long petioles, with the lobes incised; cauline ones somewhat cuneiform; the uppermost entire; peduncles and calyx hispid with glandular hairs; segments of the calyx oblong, erect; petals obovate, retuse. *Hook.*—*Linn. spec.* (*ed.* 2) *p.* 578; *Jacq. ic. rar.* 1. *t.* 81; *Don, Saxifr. l. c. p.* 443; *Hook.! bot. mag. t.* 3026, *& fl. Bor.-Am.* 1. *p.* 245. S. rupestris, *Willd. spec.* 2. *p.* 653. S. Ponæ, *Sternb. rev. Saxifr. p.* 47, *t.* 18, *& t.* 11, *f.* 6.

Alpine rivulets upon the Rocky Mountains, *Drummond!* in *Hook.*

§ 9. *Caudex above the ground none: stem annual, more or less leafy: calyx campanulate, coherent with the base of the ovary; the segments spreading: stamens mostly* 5.—Isomeria.

42. *S. Jamesii* (Torr.): glandularly puberulent; radical leaves on rather long petioles, reniform-cordate, smoothish, obscurely veined, crenately toothed or lobed; cauline ones very few, the uppermost bract-like, cuneiform; raceme compound; calyx (and pedicels) glandular, purplish; the tube campanulate, cohering at the base with the ovary; the segments triangular-ovate, rather acute, about the length of the unguiculate orbicular or spatulate petals; stamens 10.—*Torr.! in ann. lyc. New York*, 2. *p.* 204; *Hook.! fl. Bor.-Am.* 1. *p.* 204, *t.* 84.

Dry rocky places on the Rocky Mountains in lat. 41°, *Dr. James!* and farther north in the same range, *Drummond!*—Rhizoma thick. Stem 2–4 inches high, 5–10-flowered; the branches of the paniculate raceme subtended by leafy bracts. Flowers large. Petals purplish. Filaments scarcely longer than the oblong anthers.—The form and size of the petals seem to be quite variable in this species. In the specimens collected by Dr. James they are orbicular with very slender claws, as originally described, at first a little longer than the calyx-segments, but at length considerably exserted. As described and figured by Hooker from Drummond's specimens, they are small, spatulate and acute. In our specimen, collected by Drummond, the petals are not uniform in shape, but are more commonly obtuse.

43. *S. Richardsonii* (Hook.): stem glandular, pubescent near the summit; leaves on long petioles, orbicular-cordate, crenately lobed, veiny, the margins and veins beneath beset with pedicellate glands; raceme compound, somewhat spicate; the pedicels and lanceolate bracts glandular; petals obovate-elliptical, with short claws, nerved, very acute, nearly twice the length of the acuminate segments of the calyx; stamens 5. *Hook.! fl. Bor.-Am.* 1. *p.* 247. S. Nelsoniana, *Hook. & Arn.! bot. Beechey, p.* 124, *t.* 29, not of *Don.*

Arctic Sea-shore, near Mackenzie River, *Dr. Richardson.* Kotzebue's Sound, *Capt. Beechey!*—A robust and handsome species, often a foot high. The flowers are large and apparently white.

44. *S. elata* (Nutt. mss.): "more or less hirsute with long brownish hairs; stem leafy, simple, tall and erect, smooth and cymosely branched above; the branches slender; leaves cordate, roundish, 5–7-lobed, acutely and incisely serrate, petioled, with tufts of long chaffy hairs in the axils; peduncles bracteate, viscid; segments of the calyx lanceolate, acute, scarcely half the length of the cuneate-oblong obtuse petals; stamens 5.

"In wet places near Chenook Point at the estuary of the Oregon, rare. June.—A very remarkable robust species, 12–18 inches high, with acutely lobed many-cleft veiny leaves, similar to some species of Ranunculus; the incised and unequal small serratures usually terminated by short hairs. The slender axillary flower-branches arise near the summit of the stem, and terminate in loose few-flowered cymes of small white pedicellate flowers. Styles 2, rather short: about half of the ovary free." *Nuttall.*—We have not seen this species.

45. *S. ranunculifolia* (Hook.): somewhat glandularly pubescent, slender; lower leaves on very long petioles, reniform, 3-parted, the segments broadly cuneiform and incisely lobed; those of the stem few; flowers corymbose, pentandrous; petals obovate, twice the length of the glandular acute segments of the calyx. *Hook. fl. Bor.-Am.* 1. *p.* 246, *t.* 83.

Common on the high grounds around the Kettle Falls of the Oregon, and on the Rocky Mountains, *Douglas*—Stem nearly a foot high, slender. Petioles of the radical leaves bulbiferous at the base. Corymb compact. Flowers white, as large as in S. stellaris. *Hook.*—This species is only known to us through the figure and description of Hooker. Possibly a species of Boykinia; but it cannot be our B. occidentalis.

46. *S.? Sullivantii:* somewhat glandular; stems or scapes declined, slender, 1–2-leaved; radical leaves reniform-orbicular, incisely dentate with numerous broadly ovate teeth, and slightly lobed, nearly glabrous, veiny, on long petioles; cauline leaf similar but smaller, or the upper one nearly sessile and bract-like; flowers paniculate-cymose; calyx glabrous, coherent only with the base of the ovary; the segments ovate, rather obtuse, scarcely half the length of the oval-spatulate distinctly unguiculate slightly acute petals; stamens 5, shorter than the calyx.

Limestone cliffs, Highland County, Ohio, *Mr. Wm. S. Sullivant!* May–June.—Stems weak, diffuse or decumbent, about 6 inches in length. Radical leaves 2 inches or more in width, reticulately radiate-veined, the sinus at the base often narrow: petioles 3–4 inches long, with a few scattered glandular hairs. Bracts (small, foliaceous), peduncles, and short pedicels, as well as the upper part of the stem, glandular-pubescent. Flowers smaller than in S. Virginiensis, white. Ovary 2-celled; the carpels united nearly to the summit, free from the campanulate calyx except at the very base: styles short: stigmas minute.—We have not seen the fruit of this interesting plant, which its zealous discoverer obtained in flower only. It must doubtless rank among the anomalous pentandrous species of Saxifraga, but it is very different from any other described. It has manifest points of resemblance to Heuchera; but the ovary is perfectly 2-celled, with a central placenta; the petals conspicuous, &c.

S. petiolaris (R. Brown.)—This species is indicated, although we believe not described, in *Ross' 1st voy.* (*ed.* 2) 2. *p.* 192, a work which we regret is not at present accessible to us. It is again mentioned in the supplement to Parry's Voyage under S. hyperborea (which Hooker unites to S. rivularis), where it is said to be distinguished from both these species "by all the leaves being dotted with subsessile glands, the radical ones equalling or exceeding the scape, the floral leaf lobed; the petals 3-nerved."—Dr. Richardson (*appx. Frankl. journ. ed.* 2. *p.* 14) takes notice of a specimen collected on the Arctic sea-shore, which was thought to belong to S. rivularis, but which he supposes may be the S. petiolaris, chiefly on account of the tripli-nerved petals. Neither of these plants is, we believe, taken up by Hooker.

S. nutans, Don (*Saxifr. l. c. p.* 368), is Romanzovia Unalaschcensis! (v. sp. in *herb. Banks.*)

S. androsacea, Linn., is given by Pursh as a native of the North West Coast, on the authority of a specimen in the Banksian herbarium. The figure of Jacquin being cited with a mark of doubt, and as Mr. Don does not notice the plant, it belongs probably to some different species.

S. spathulata β.? arctica, Seringe (Antiphylla, *Haw.*) from Melville Island, we are unable to identify.

3. BOYKINIA. *Nutt. in jour. acad. Philad.* 7. *p.* 113.

Calyx turbinate, at length urceolate, coherent with the ovary; the limb spreading, 5-cleft; segments triangular, acute, valvate in æstivation. Petals entire, longer than the lobes of the calyx, deciduous. Stamens 5, inserted in the throat of the calyx, shorter than its segments: anthers 2-celled. Styles 2–3, short: stigmas simple. Capsule invested with the coherent urceolate calyx-tube, 2–3-celled, with a central many-seeded placenta, 2-beaked, dehiscent between the beaks. Seeds horizontal, ovoid, glabrous (minutely marked with elevated dots under a strong lens).—Perennial herbs, with leafy stems. Leaves alternate, palmately veined and lobed, incisely toothed; the teeth mucronate: petioles scarcely stipuliform at the base. Flowers small, in corymbose cymes.

Intermediate between Saxifraga and Heuchera, as Nuttall remarks, but more nearly allied to the former; which has a few pentandrous species. The genus is dedicated to Dr. Boykin, of Georgia; whose name frequently occurs as a contributor to this work.

1. *B. aconitifolia* (Nutt.): glandular; leaves somewhat glabrous, dilated and somewhat truncate at the base, deeply 5–7-lobed; cyme viscid, fastigiate, the flowers secund; teeth of the calyx broadly triangular.—*Nutt.! l. c.*

Mountains of North Carolina, *Mr. Kinn* (in *herb. Muhl.!*) *Mr. Curtis!* June–July.—Stem rather stout, 1–2 feet high. Leaves somewhat like those of Aconitum Napellus; the lower ones on long petioles; the uppermost nearly sessile. Cyme many-flowered; the branches somewhat racemose. Calyx coherent nearly to the summit of the ovary; the limb at first spreading; the teeth short, 3-nerved, somewhat acuminate. Petals (often none?) spatulate-obovate, sessile, longer than the calyx, white. Capsule mostly 2-celled: placenta thick, very many-seeded.

2. *B. occidentalis*: nearly glabrous; leaves roundish-cordate, incisely somewhat 5-lobed and toothed; cyme loose, pubescent and slightly glandular; teeth of the calyx triangular-lanceolate.

Oregon, *Douglas!* (1835)—Stem very slender, 1–2 feet high. Lower leaves 1½ inch in diameter, with very short lobes, on long slender petioles. Cyme somewhat paniculate; the peduncles rather few-flowered. Petals very caducous, white.—Saxifraga ranunculifolia is perhaps a third species of this genus.

4. HEUCHERA. *Linn.; Gærtn. fr. t. 177; R. Br. in Richards. app. Frankl. journ. ed. 2. p. 52, t. 29.*

Calyx campanulate, coherent with the ovary below, 5-cleft (sometimes unequal); the segments obtuse, imbricate in æstivation. Petals 5, small, entire. Stamens 5, inserted alternately with the petals into the throat of the calyx: filaments exserted or included: anthers 2-celled. Styles 2. Capsule 1-celled, with 2 parietal adnate placentæ, many-seeded, 2-beaked, dehiscent between the beaks. Seeds horizontal, oval, minutely muricate or hispid.—Perennial mostly acaulescent herbs. Radical leaves numerous, on long petioles, palmately-veined, roundish-cordate, lobed and crenate or incised; the cauline ones, when present, alternate. Stipules adnate with the base of the petiole, free at the apex. Scapes mostly panicled; the peduncles cymosely dichotomous, commonly glandular.

§ 1. *Filaments and styles filiform, much exserted: calyx short, equal, obconic or campanulate; the lobes spreading: petals mostly persistent, at length often revolute or twisted: panicles effuse.*—Euheuchera.

1. *H. Americana* (Linn.): scabrous-puberulent and somewhat viscid; scape mostly naked; leaves roundish-cordate, somewhat 7–9-lobed; the lobes very short and rounded, dentate-crenate with short and broad mucronate teeth, ciliate; panicle elongated, loose, many-flowered; the pedicels divaricate; bracts linear or subulate; petals spatulate, somewhat unequal, about the length of the calyx-segments; stamens (at first unequal) at length much exserted; anthers orange-color.—*Linn. spec.* 1. *p.* 226; *Willd.! spec.* 1. *p.* 1328; *Ell.! sk.* 1. *p.* 337; *Torr.! fl.* 1. *p.* 280; *DC.! prodr.* 4. *p.* 51; *Darlingt. fl. Cest. p.* 175. H. Cortusa, *Michx.! fl.* 1. *p.* 171. H. viscida, *Pursh! fl.* 1. *p.* 187. H. glauca, *Raf. med. flora,* 1. *p.* 244?

Woodlands and rocky places, Connecticut, Southern part of New York! and Pennsylvania! to Alabama, and Missouri, *Dr. James!* May–June.—Root astringent, as in all the other species. Leaves 1–4 inches in width, slightly hispid with appressed hairs above, pubescent on the veins beneath, membranaceous: petioles elongated. Scape 2–4 feet high, rarely with one or two small leaves; the panicle a foot or more in length. Calyx short, pulverulent-glandular. Petals purplish or white, about 3-nerved, small.—*Alum-root.*

2. *H. caulescens* (Pursh): scape about 2-leaved or often naked, nearly glabrous; the base and the elongated petioles a little villous with deflexed rusty hairs; leaves cordate, sharply 5–7-lobed, glabrous (except the veins beneath); the lobes acute, acutely and unequally toothed, hispidly ciliate; panicle slender, loose; the peduncles many-flowered; bracts linear or subulate; petals linear-spatulate, narrow, about the length of the exserted stamens.—*Pursh! fl.* 1. *p.* 188; *DC. l. c.* H. acerifolia, *Raf. med. flora, no.* 49, *p.* 241.

β. scape and petioles glabrous; radical leaves slightly lobed; cauline ones 2 from the same point; branches of the peduncles racemosely elongated, divaricate, many-flowered.

On the high mountains of Carolina, *Lyon*, ex *Pursh!* Table Mountain, N. Carolina, *Curtis!* Kentucky, Tennessee, &c. *Rafinesque.* *β.* Buncombe, N. Carolina, *Curtis!* May–June.—Leaves more deeply and sharply lobed than any other species of the United States (resembling some species of Maple); the lobes somewhat ovate, acute, divaricate; the teeth mucronate. Peduncles minutely glandular. Flowers about the size of H. Americana: calyx short, a little hairy. Petals nearly thrice the length of the calyx-segments, white.—The specimens from Kamtschatka (in *herb. Lamb.* !) which Pursh wrongly refers to the present species, belong doubtless to H. glabra, *Willd.* The name of H. caulescens is not well chosen: it was probably intended to apply in part to the Kamtschatka plant, as the scape in Pursh's own American specimen is leafless.

3. *H. villosa* (Michx.): scape 1–3-leaved or nearly naked, the lower portion and the stout petioles very villous with rusty deflexed hairs; radical leaves (large) roundish-cordate, membranaceous, glabrous above, villous on the veins beneath, somewhat 7–9-lobed; the lobes short, acute, somewhat incised, crenate with mucronate teeth, ciliate; panicle loose; peduncles filiform, many-flowered; bracts laciniate or cleft at the apex, ciliate; flowers very small; petals linear-spatulate and extremely narrow, unguiculate, about the length of the exserted stamens.—*Michx.! fl.* 1. *p.* 172; *Pursh! fl.* 1. *p.* 188; *DC. l. c.*; *Hook. fl. Bor.-Am.* 1. *p.* 236. H. squamosa (& foliosa!), *Raf. med. flora, l. c.* H. parviflora, *Bartl. ind. sem. Gœtt.* 1838.

Mountains of Maryland! Virginia! and N. Carolina, to the Cliffs of Kentucky River, *Dr. Short!* Also Canada, *Mr. Goldie*, ex *Hook.* July.—A large and well-marked species; the radical leaves sometimes 8 inches in diameter, on long stout petioles; the mucronate tips of the teeth attenuate into a bristle. Scape stout, with 2–3 small leaves, or with squamaceous bracts (stipules) in their stead, tipped with a minute foliaceous lamina. Peduncles and calyx more or less hairy, but not viscid. Petals almost like the filaments, white.

4. *H. glabra* (Willd.): scape 1–3-leaved, or rarely almost naked; leaves roundish-cordate, acutely 5–7-lobed, incisely toothed, and, with the petioles and scape, glabrous; the radical ones on long petioles; those of the stem more deeply and sharply lobed, somewhat incised, on short petioles; branches of the panicle loose, divaricate; lowermost bracts often leaf-like, the upper ones linear, mucronate, entire or incised; limb of the petals lanceolate-ovate, about the length of the claws, nearly equalling the exserted stamens.—*Willd.! in Rœm. & Schult. syst.* 6. *p.* 216; *DC. prodr.* 4. *p.* 52; *Hook.! fl. Bor.-Am.* 1. *p.* 236, *t.* 79. H. divaricata, *Fisch.! in DC. prodr. l. c.*; *Bongard, veg. Sitcha, l. c. p.* 139. Tiarella colorans, *Graham, in Edinb. phil. jour.* ex *Hook.*

N. W. Coast (*Pallas!*) from Sitcha and other islands to Fort Vancouver, *Dr. Scouler! Douglas.* Norfolk Sound, *Eschscholtz!* Mount Ranier, *Mr. Tolmie!* and on the Rocky Mountains in lat. 54°, *Drummond*, ex *Hook.*—Rhizoma elongated, procumbent, scaly. Scapes slender, 12–18 inches high, erect or apparently sometimes reclined. Teeth of the leaves, especially the cauline ones, sharply mucronate. Peduncles and filiform pedicels puberulent and a little glandular. Calyx pubescent with appressed hairs; the teeth short, rather obtuse. Flowers scarcely larger than in H. micrantha. Petals small. Styles at length much exserted. Seeds oblong or oval, minutely hispid in lines.

5. *H. micrantha* (Dougl.): scape nearly naked, the lower portion and the petioles very villous with long spreading reddish hairs; leaves roundish-cordate, slightly and obtusely lobed, mucronately crenate; panicle loose, virgate; the bracts of the lower branches leaf-like, the uppermost setaceous; petals spatulate-lanceolate, with filiform claws, nearly the length of the much exserted stamens.—*Dougl.! in bot. reg. t.* 1302; *DC.! prodr.* 4. *appx. p.* 667; *Hook.! fl. Bor.-Am.* 1. *p.* 236. H. Barbarossa, *Presl! rel. Hænk.* 2. *p.* 56. H. longipetala, *Moçino, ic. ined.* ex *DC.!*

β. more glabrous; petioles and base of the scape pilose with very scattered hairs.

Rocky banks of the Oregon River &c., *Dr. Scouler! Douglas!* Nootka, *Hænke!* (v. sp. in *herb. imp. Vindob.*) *β.* Rocks of the Oregon, near the mouth of the Wahlamet, *Nuttall!* June.

§ 2. *Filaments and styles subulate-filiform, included or at length scarcely exserted: calyx campanulate, with the lobes erect; the throat usually more or less oblique: petals persistent: flowers large: panicles contracted or thyrsoid.*—HERUCHEA.

6. *H. pubescens* (Pursh): scape naked, minutely pulverulent-pubescent and scabrous, the lower portion, with the leaves and petioles, nearly glabrous; leaves orbicular, cordate, obtusely 5–7-lobed; the lobes short and rounded, crenulate with very short and broad obtuse slightly mucronate teeth, hispidly-ciliate; panicle somewhat thyrsoid, with few-flowered contracted branches; bracts linear-setaceous; petals spatulate, scarcely unguiculate, veiny (violet-purple), longer than the included stamens, about the length of the somewhat unequal segments of the calyx; styles filiform, at length slightly exserted.—*Pursh! fl.* 1. *p.* 187; *DC. prodr.* 4. *p.* 52. H. grandiflora, *Raf.! mss.* H. pulverulenta, *Raf. med. flora*, 1. *p.* 244.

Blue Mountains of Pennsylvania and Virginia, *Pursh!* Valleys in the mountains of Virginia, *Prof. Daubeny!* Alleghanies of Maryland, *Rafinesque!* and "on the hills bordering the *Mud-licks*, Bath, Kentucky," *Dr. Short!* May–June.—Leaves 2–3 inches in diameter, quite glabrous on both surfaces or a little pubescent beneath: petioles rather short. Scape 8–16 inches high, slender. Bracts entire or laciniate-fimbriate. Flowers about 5 lines in length. Calyx-segments greenish-white; two of them narrower. Petals minutely erose and undulate on the margins.—The name imposed by Pursh is not appropriate, as this is usually perhaps the most glabrous species in the United States.

7. *H. hispida* (Pursh): scape mostly 1–2-leaved, glabrous; radical leaves roundish-cordate, rather obtusely 5–7-lobed, crenate with very broad and short almost retuse mucronate teeth, hispidly ciliate; the upper surface hispid; the lower, with the petioles, glabrous; branches of the panicle few-flowered; petals broadly obovate-spatulate, unguiculate, veiny (violet-purple),

somewhat longer than the nearly equal calyx-segments, a little shorter than the slightly exserted stamens; styles filiform, at length exserted.—*Pursh! fl.* 1. *p.* 188; *DC. l. c.* (H. reniformis, *Raf. med. flora, l. c.?*)

High mountains of Virginia and N. Carolina, *Pursh!* May–June.—Resembles the preceding species; but the flowers are rather smaller. Calyx-segments short, obtuse. Limb of the petals undulate towards the apex, very broadly spatulate or somewhat rhomboid.—We are not aware that this species has been collected by any botanist except Pursh, (one of whose specimens is preserved in the herbarium of the late Prof. Barton, and another very poor one in that of Mr. Lambert), and perhaps Rafinesque.

8. *H. Richardsonii* (R. Brown): scape naked, hairy and scabrous; leaves roundish-cordate, with a deep sinus, somewhat 7-lobed, incised and crenate, ciliate, nearly glabrous above; the veins beneath and petioles hairy; panicle thyrsoid or racemiform, narrow; bracts lanceolate, laciniate-fimbriate; limb of the calyx unequal, oblique; petals cuneate-obovate or spatulate, ciliolate, scarcely exceeding the calyx-segments, nearly the length of the stamens; styles filiform-subulate, included.—*R. Br.! in Richards. appx. Frankl. journ. p.* 53, *t.* 29; *DC. l. c.*; *Torr.! in ann. lyc. New York,* 2. *p.* 204; *Hook.! fl. Bor.-Am.* 1. *p.* 237.

Rocky banks of rivers, from lat. 54° to 64°, *Richardson!* and west to the Rocky Mountains, *Drummond!* Also on the prairies of the Missouri, *Dr. James!*—Lobes of the leaves short and obtuse; the obtuse teeth mucronate with a short bristle. Scape 12–18 inches high. Flowers greenish, larger than in H. pubescens. Petals somewhat unequal.—In the beautiful figure cited above, the styles are wrongly represented as united below, the bracts are not well given, and the plant is represented as perfectly glabrous. The specimens of Drummond and those of Dr. James are precisely alike, but have the scape and petioles quite hirsute.

§ 3. *Filaments and styles very short, subulate, included: calyx campanulate; the lobes erect and somewhat unequal: petals minute and often fugacious, or none: flowers usually large, glomerate or spicate.* — HOLOCHLOA, Nutt. mss.

9. *H. cylindrica* (Dougl.): scape elongated, wholly naked; the lower portion, with the petioles and veins of the leaves beneath, very villous or hirsute with spreading fulvous hairs; leaves roundish-cordate, glabrous above, 5–7-lobed; the lobes obtuse, crenate with mucronate teeth; panicle spicate, cylindrical; bracts scarious, laciniate-fimbriate; petals minute or none; stamens shorter than the rather unequal segments of the calyx; styles short.—*Dougl. in Hook. fl. Bor.-Am.* 1. *p.* 237; *Lindl. bot. reg. t.* 1924. Holochloa elata & cylindrica, *Nutt.! mss.*

Oregon, on woody hills and the steep banks of streams, *Douglas, Nuttall!* May–June.—Leaves small; the crenatures mucronate with a very short bristle; the margin very minutely hispidly ciliate. Scape 2–3 feet high, very glandular above. Flowers rather smaller than in H. Richardsonii, on very short pedicels, forming a compact slightly compound spike 3–4 inches long. Bracts lanceolate, the margin ciliate or laciniately fringed. Calyx glandular and scabrous, cleft to the middle. Petals mere filiform rudiments, or none. We find commonly one very small spatulate petal, with glandular margins, like those of H. Richardsonii but much smaller, and one or two minute rudiments. The seeds are hispid, as in other species of the genus.—Mr. Nuttall proposes to separate this and the allied species as a distinct genus, but their close relationship with both H. Richardsonii and the succeeding section, forbids their separation except as a division or subgenus.

10. *H. glabella:* "slightly pulverulent-pubescent, destitute of hirsute hairs; scape naked, the flowers in a conglomerate spike; leaves somewhat elliptical-cordate, obtuse, slightly lobed and very obtusely crenate, minutely hirsute-ciliate, the teeth apiculate." *Nutt.*—Holochloa glabra, *Nutt. mss.;* not Heuchera glabra, *Willd.*

Rocky Mountains towards Oregon; in rocky places.—Allied apparently to Heuchera cylindrica, but without hirsute hairs; the plant almost glabrous; the leaves longer than broad, somewhat truncate at the base, with a small sinus, the crenatures apiculate with hairs." *Nuttall.*—We have not seen this species; it is apparently more allied to the following.

11. *H. ovalifolia* (Nutt.! mss. under Holochloa): "minutely and somewhat glandularly pubescent throughout; scapes naked, slender; leaves roundish-oval, not cordate, often slightly cuneiform at the base, doubly crenate or crenately incised; flowers few, in a nearly simple spike; petals none; segments of the calyx ovate, the two upper longer."

Blue Mountains, Oregon, on rocks, *Nuttall!*—Somewhat cæspitose. Scapes about a span high; the plant wholly destitute of villous hairs. Leaves about an inch in length, crenately incised and crenate, the teeth very obtuse and often slightly apiculate, minutely viscid-pubescent on both sides.—We have only seen it in fruit.

12. *H. bracteata* (Seringe): small, nearly glabrous; scape leafless; leaves forming a radical cluster, roundish-subcordate, incisely lobed, glabrous; the lobes short, crenately-toothed, subciliate; the teeth setaceously mucronate; panicle glomerate; bracts lanceolate; flowers small; petals linear-spatulate, very narrow, and, with the stamens, about the length of slightly unequal erect segments of the calyx; styles subulate-filiform, somewhat included.—*Seringe, in DC. l. c.* Tiarella? bracteata, *Torr.! in ann. lyc. New York,* 2. *p.* 204.

On the Rocky Mountains in about lat. 41°, *Dr. James!*—Caudex thick and somewhat ligneous. Leaves scarcely more than half an inch in diameter, cordate or truncate at the base, coriaceous. Scape 3–6 inches high, slender, naked, or with 2 or 3 entire or laciniate bracts toward the summit. Flowers in a spicate somewhat compound raceme about an inch long, crowded. Calyx glandularly puberulent, campanulate, deeply cleft; the segments slightly obovate. Petals filiform towards the base, somewhat persistent; one or two often wanting.—This remarkable alpine species, much the smallest of the genus, agrees with Holochloa, *Nutt.* in the structure of its flowers, which, however, are only about half the size of those of Heuchera Americana.

§ 4. *Filaments and styles subulate, very short: calyx obconic at the base, rotate, equal: petals small, fugacious: flowers small: panicles narrow, loose.*—HEUCHERELLA.

13. *H. parvifolia* (Nutt.! mss.): scabrous-puberulent; scape naked; leaves forming a small radical cluster, roundish-cordate, crenately 5–7-lobed, at length glabrous, ciliate; the lobes short and rounded; panicle racemose, rather loose; bracts small, laciniate-ciliate; flowers very small; limb of the calyx flat, dilated; petals minute, caducous; stamens shorter than the lobes of the calyx; styles very short, conical.

Rocky Mountains, *Dr. James!* Blue Mountains of Oregon, *Nuttall!*—Caudex somewhat ligneous, thick. Leaves an inch or more in diameter; the lobes with one or two crenatures, not mucronate. Scape 8–12 inches high: panicle branching below. Calyx-tube obconic, adherent nearly to the summit of the ovary. Filaments very short and thick, subulate: anthers large for the size of the flower. Seeds hispid.—Mr. Nuttall supposes this species to be nearly allied to H. Richardsonii. It seems to us, however, to form, with the succeeding species, a very well-marked section.

14. *H. hirtiflora:* hirsutely hairy; scape naked; leaves cordate, somewhat hairy, obtusely 5–7-lobed, incisely crenate; panicle elongated, narrow, loose; flowers small; calyx canescently villous; the limb flat, with short and broad very obtuse lobes; petals spatulate, unguiculate, somewhat caducous, and, with the stamens, about the length of the lobes of the calyx; styles very short.—H. hispida, *Hook. & Arn.! bot. Beechey, suppl. p.* 347, not of *Pursh.*

California, *Douglas!*—Leaves about as large as in Tiarella cordifolia, cordate-ovate, rather obtuse. Scape 8–12 inches high. Calyx-tube adherent to the base of the ovary. Filaments subulate: anthers roundish.

15. *H. pilosissima* (Fisch. & Meyer): subcaulescent, very villous with long spreading glandular hairs; leaves ovate-cordate, rather obtusely lobed, toothed; pedicels shorter than the flowers; petals nearly linear, twice the length of the connivent teeth of the subglobose calyx; stamens slightly exserted; styles rather included. *Fisch. & Meyer, ind. sem. St. Petersb.* (5) 1838, *& in Linnæa, suppl.* 13. *p.* 106.

California, at the Russian colony Ross, *Fischer & Meyer.*—This plant is compared with H. Americana and H. micrantha; but it is apparently allied to the preceding.

5. TOLMIEA. *Torr. & Gr.* (not of *Hook.*)

Calyx infundibuliform, free from the ovary, somewhat unequally 5-cleft at the summit, split externally from above downwards and gibbous at the base: æstivation imbricate. Petals 5, filiform, exserted, recurved, inserted between the teeth of the calyx, persistent. Stamens 3, scarcely exserted, inserted into the throat of the calyx opposite the three superior lobes: filaments subulate: anthers large, reniform, 2-celled; the cells confluent at the apex. Ovary oblong, attenuate at the base, 1-celled, with 2 parietal placentæ: styles 2, subulate: stigmas obtuse. Capsule oblong, membranaceous, 1-celled, many-seeded, 2-valved at the apex; the valves equal. Seeds globose, very small, muricate-hispid.—A perennial herb, with fibrous roots. Leaves cordate, incised; the cauline ones alternate. Stipules adnate, scarious. Flowers (rather large) in a slender elongated raceme. Bracts minute, scarious. Pedicels with 2 setaceous opposite deciduous bracteoles, erect-spreading in fruit.

T. Menziesii.—Tiarella Menziesii, *Pursh, fl.* 1. *p.* 313; *DC. prodr.* 4. *p.* 50. T. stenopetala, *Presl, rel. Hænk.?* Heuchera Menziesii, *Hook.! fl. Bor.-Am.* 1. *p.* 237, *t.* 80.

Shady woods, Banks Island, N. W. Coast, *Menzies!* and from Puget Sound to the Oregon River, *Douglas! Scouler! Nuttall!*—Stem 1–2 feet high, mostly simple, slender, 3–5-leaved, hairy, as well as the leaves and petioles. Leaves ovate-cordate, on slender petioles, somewhat 5–7-lobed, acute, sharply incisely serrate. Raceme elongated in fruit: pedicels scarcely as long as the flowers, recurved-spreading, rather erect in fruit. Calyx tubular-infundibuliform, with a saccate projection at the base on the lower side, cleft on the same side from an early period; the lobes rather unequal, ovate, veined. Petals filiform, much longer than the lobes of the calyx, very slightly dilated and flattened toward the summit. Anthers peltate and 4-lobed after the emission of the pollen. Ovary pubescent. Capsule substipitate, emerging during its growth from the fissure in the persistent calyx-tube, which partly surrounds its base.—The Tolmiea of Hooker being identical with the earlier-published Cladothamnus of Bongard, we have dedicated this well-marked genus, as we consider it, to Mr. Tolmie, the surgeon of the Hudson's Bay Company at Puget Sound; in order that his name, like that of Menzies, Douglas, Drummond, and Scouler, may be permanently associated with the plants of the region in which they have all made so many interesting discoveries.

6. TELLIMA. *R. Br. in Richards. appx. p.* 53; *Lindl. bot. reg. t.* 1178.

Tellima § Amilleta, *Endl.*

Calyx campanulate, obconic and coherent with the ovary at the base, free and inflated above, 5-toothed: æstivation valvate. Petals 5, inserted in the throat of the calyx, laciniate-pinnatifid, sessile. Stamens 10, included: filaments short: anthers ovate, 2-celled. Styles 2, short, distinct: stigmas capitate, obscurely 3-lobed. Capsule 1-celled, with 2 parietal many-seeded placentæ, 2-beaked, opening (prematurely?) between the beaks. Seeds horizontal.—A perennial herb, with roundish-cordate palmately-lobed incisely toothed leaves; the cauline ones similar, 2–4, alternate: petioles somewhat stipuliform at the base. Flowers large, in an elongated simple somewhat spicate raceme. Petals small, greenish. Pedicels nodding in flower, at length erect. Bracts minute.

T. grandiflora (Dougl.)—*Lindl.! l. c.*; *DC.! prodr.* 4. *p.* 49; *Bongard! veg. Sitcha, l. c. p.* 139; *Hook.! fl. Bor.-Am.* 1. *p.* 239. Mitella grandiflora, *Pursh! fl.* 1. *p.* 314. Tiarella alternifolia, *Fisch.! in DC. l. c.*

Shady woods, N. W. Coast, *Menzies! Eschscholtz!* Sitcha, *Bongard!* Oregon, *Douglas! Dr. Scouler! Mr. Tolmie! Nuttall!*—Stem stout, about 2 feet high, and, with the petioles and leaves, somewhat hirsute. Raceme many-flowered. Flowers about half an inch in length and breadth.—We have not examined this plant in a living state; but in our numerous dried specimens we observe that the ovary, when only half grown, opens at the top by a longitudinal fissure, which extends along the inside of the styles quite to the summit, so that these may be laid open. We notice the same thing to some extent in Lithophragma heterophylla. We have not seen the mature fruit.

7. LITHOPHRAGMA. (Tellima § Lithofragma, *Nutt. in jour. acad. Philad.* 7. *p.* 26, excl. syn. Mitella trifida.)

Tellima § Alletima, *Endl.*

Calyx cyathiform or campanulate, not inflated, coherent with or free from the lower part of the ovary; the limb short, 5-cleft, valvate in æstivation. Petals 5, inserted in the sinuses of the calyx just below the margin, cuneiform, unguiculate, much exserted, 3-cleft, or rarely entire, deciduous. Stamens 10, included, inserted in the throat of the calyx: filaments very short: anthers cordate, 2-celled. Styles 3, short: stigmas obtuse or somewhat dilated. Capsule 1-celled, with 3 parietal many-seeded placentæ, 3-valved at the apex. Seeds horizontal, ovate, with a distinct raphe; the testa smooth and membranaceous.—Small and slender herbs (natives of Oregon and California), annual or perennial? with fibrous at length grumous roots, and lobed or divided leaves. Cauline leaves few, commonly alternate: petioles stipuliform at the base. Racemes simple, few-flowered: pedicels erect in fruit. Bracts minute. Petals rose-color or nearly white, mostly rather large for the size of the flower.

§ 1. *Petals 3-cleft or 3-lobed.*—LITHOPHRAGMA, Nutt. mss. (Tellima § Lithofragma, *Nutt. in jour. acad. l. c.* partly.)

* *Calyx mostly cyathiform, adherent to the lower part of the ovary.*

1. *L. parviflora* (Nutt.): canescently hirsute; leaves ternately divided or parted, the segments 3-cleft; raceme at first short, elongated in fruit; calyx cyathiform, attenuate into the short pedicel; petals much exserted, deeply 3-cleft.—*Nutt.! in jour. acad. Philad. l. c.* Tellima parviflora, *Hook.! fl. Bor.-Am.* 1. *p.* 239, *t.* 78, *A.* T. (Lithophragma) parvifolia, *Hook. & Arn.! bot. Beechey, suppl. p.* 346.

β.? micrantha: much smaller; flowers nearly sessile: petals (pale rose-color) scarcely exserted.—L. micrantha, *Nutt. mss.*

Woods and stony places, Oregon, *Douglas! Dr. Scouler! Nuttall!* N. California, *Menzies*, ex *Hook.* *β.* Dry hills on the Flat-head River, near the Rocky Mountains, *Nuttall.* May–June.—Stems 8–12 inches high, simple. Cauline leaves 1–2, similar to the radical ones, or sometimes less divided, petioled. Pedicels in fruit about the length of the clavate-obconic calyx. Petals rather large, deep rose-color.—This species has larger flowers than any other of the genus. We have not seen the L. micrantha of Nuttall, which from the description seems to be only a smaller-flowered variety.

2. *L. glabra* (Nutt.! mss.): "nearly glabrous; leaves reniform-cordate, 3-parted; the segments 3-lobed at the apex, the lateral ones often 2-cleft; raceme elongated; pedicels much longer than the campanulate pubescent calyx; petals equally 3-cleft, longer than the calyx.

"Blue Mountains of the Oregon. July–Aug.—Stem slender, about 10 inches high. Raceme few- (3–6-) flowered: pedicels nearly half an inch long. Calyx as broad as long." *Nuttall.*

* * *Calyx campanulate, free from the ovary.*

3. *L. tenella* (Nutt.! mss.); "scabrous-puberulent; leaves 3–5-lobed, somewhat cuneiform, the lobes toothed; cauline ones minute, 3-cleft; raceme few- (3–6-) flowered; pedicels about the length of the obconical calyx; petals equally 3-cleft, rather longer than the calyx.

"In the central range of the Rocky Mountains, on the banks of the Big Sandy and Siskadee Rivers of the Colorado of the West, about lat. 42°. June–July.—A diminutive species, 4–5 inches high. Leaves and flowers small. Teeth of the calyx short." *Nuttall.*—This species, we find, has the calyx wholly free from the ovary, as in L. heterophylla.

4. *L. heterophylla* (Hook. & Arn.): scabrous-hirsute; radical leaves cordate, somewhat 3–5-lobed, crenate; cauline ones deeply 3–5-lobed, the lobes mostly cleft; raceme elongated; pedicels very short; calyx short, broadly campanulate; petals much exserted, 3-cleft at the summit; ovary

nearly free from the calyx.—Tellima (Lithophragma) heterophylla, *Hook. & Arn. bot. Beechey, suppl. p.* 346.

In shady places, St. Barbara, California, *Douglas! Nuttall!* April.—Stem 12–15 inches high. Leaves variable in size and form; the radical ones resembling those of Mitella nuda. Raceme 6–12-flowered; the flowers rather large. Calyx truncate at the base. Petals pale rose-color.

§ 2. *Petals spatulate-cuneiform, entire: calyx cyathiform-campanulate, nearly free from the ovary.*—LITHOPHRAGMELLA.

5. *L. Cymbalaria:* minutely glandular-scabrous or nearly glabrous; stem very slender; radical leaves reniform, slightly 3–5-lobed, the lobes rounded and entire; the cauline 2, nearly opposite, 3-cleft, on slender petioles; raceme few-flowered; the pedicels longer than the calyx; petals much exserted.—Saxifraga Californica, *Nutt.! mss.*

Shady woods near St. Barbara, California, *Nuttall!*—(♃ *Nutt.*) Stem weak, 6–10 inches in length. Leaves small, membranaceous, glabrous; the pair of cauline ones near the middle of the stem. Flowers about as large as in Saxifraga stellaris. Lobes of the calyx ovate-triangular, obtuse, rather shorter than the tube. Petals nearly white, thrice the length of the calyx, inserted in the sinuses, obtuse, tapering below into a slender claw. Filaments scarcely longer than the cordate-oblong anthers. Styles sometimes 2 (fide *Nutt.*), very short.—Mr. Nuttall had remarked the accordance of this plant with Lithophragma in habit, as appears from his manuscript notes; but we find a perfect agreement in structure with this genus, excepting the undivided petals.

8. MITELLA. *Tourn.; Lam. ill. t.* 373; *Hook. fl. Bor.-Am.* 1. *p.* 240.

Mitella & Drummondia, *DC.*—Mitella & Mitellopsis, *Meisn.*

Calyx short, campanulate, more or less coherent with the ovary, 5-cleft: æstivation valvate. Petals 5, pectinately pinnatifid (rarely 3-cleft), inserted into the throat of the calyx. Stamens 5 or 10, included: anthers cordate or reniform, 2-celled. Styles 2, short, distinct. Capsule 1-celled, with 2 parietal or somewhat basilar many-seeded placentæ, 2-valved at the summit. Seeds obovoid, horizontal or ascending: testa crustaceous, smooth and shining, obscurely punctate.—Perennial herbs, with mostly radical cordate somewhat lobed and crenate leaves. Scapes slender. Flowers small, in a simple spicate raceme. Bracts scarcely any.

We accord with Hooker as to the extent of this genus, and the discovery of a true Mitella with only 5 stamens confirms our view. The styles are not united in Mitella proper, as they are said to be by De Candolle and Endlicher.

§ 1. *Stamens* 10: *filaments short: calyx adherent to the base of the ovary only: stigmas obtuse or simple: placenta ovuliferous toward the base of the ovary: mature seeds few, ascending: scape with* 1–2 *alternate or opposite leaves, or naked.*—EUMITELLA.

1. *M. diphylla* (Linn.): leaves cordate, acute, somewhat 3–5-lobed, serrate-toothed, the radical ones on long petioles; the cauline 2, opposite, nearly sessile; scape many-flowered; styles very short.—*Linn.! spec.* 1. *p.* 406;

Lam. ill. t. 373, *f.* 1; *Michx.! fl.* 1. *p.* 270; *Pursh! fl.* 1. *p.* 313; *Schk. handb.* 1. *t.* 120; *Torr.! fl.* 1. *p.* 446; *Bigel. fl. Bost. ed.* 2. *p.* 178; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 240; *Darlingt. fl. Cest. p.* 271.

Moist rich woods, Canada! and Northern States! to Kentucky. May.—Leaves slightly hispid with scattered hairs above, pubescent beneath, at length almost glabrous. Scape pubescent. Raceme 6–8 inches long: pedicels shorter than the flowers. Petals and calyx-segments white.—*False Sanicle.*

2. *M. nuda* (Linn.): often stoloniferous; leaves roundish-cordate or somewhat reniform, slightly crenate-lobed, or doubly crenate, the crenatures somewhat mucronate; scape filiform, few-flowered, naked or with a single subsessile leaf; calyx flat; petals filiformly pectinate-pinnatifid.—*Linn.! spec.* 1. *p.* 406, *& amœn. acad.* 2. *p.* 352; *Willd.! spec.* 2. *p.* 660; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 14; *DC. prodr. l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 240. M. scapo nudo, &c., *Gmel. fl. Sibir.* 4. *p.* 175, *t.* 68, *f.* 2. M. cordifolia, *Lam. ill. t.* 373, *f.* 2; *Michx.! fl.* 1. *p.* 270; *Pursh, fl.* 1. *p.* 314; *Torr.! fl.* 1. *p.* 446; *DC.! l. c.* M. reniformis, *Lam. l. c. t.* 373, *f.* 2.

β. creeping shoots assurgent at the extremity, bearing a terminal raceme.—M. prostrata, *Michx.! l. c.*

In deep moist woods, Northern part of the State of New York! and New England States! to the shores of the Arctic Sea, and from Hudson's Bay to the Rocky Mountains! June.—Caudex slender, sending out, after flowering, long filiform leafy stolons. Leaves thin and membranaceous, hirsute with scattered hairs above; the lobes or crenatures rounded. Scapes 4–6 inches high, 5–10-flowered. Flowers greenish. The Siberian specimens of M. nuda in the herbarium of Linnæus, as well as those of Pallas in the herbaria of Lambert and Willdenow, are the same with the N. American plant.

§ 2. *Stamens* 5, *alternate with the* (*pinnatifid*) *petals: filaments rather short: calyx adherent to the base of the ovary: stigmas simple: placentæ parietal, many-ovuled: scape* 2–3-*leaved.*—Mitellastra.

3. *M. caulescens* (Nutt.! mss.): "leaves roundish-cordate, 3–5-lobed, obtuse, crenate; the cauline ones 2–3, alternate, petioled; raceme many-flowered; calyx flat; petals filiformly pectinate-pinnatifid; stamens 5."

Shady woods of the Oregon, near the mouth of the Wahlamet, *Nuttall!*—Plant 10–12 inches high. Leaves sparingly hirsute on both sides, obtusely and rather deeply lobed, the crenatures obtuse and mucronate, sparingly hirsute on both sides, as large as in M. diphylla. Flowers yellowish-green, larger than in M. nuda: pedicels longer than the flowers. Styles slender.—Wholly accords with the decandrous species, except in the number of the stamens and the many-ovuled placentæ, which reach nearly to the summit of the capsule, as in the following sections.

§ 3. *Stamens* 5, *opposite the* (*pinnatifid*) *petals: filaments very short: calyx adherent nearly to the summit of the ovary: stigmas subsessile,* 2-*lobed: capsule opening long before the ripening of the seeds: placentæ parietal, many-ovuled: scape naked.*—Mitellaria. (Drummondia, *DC.* not of *Hook.*—Mitellopsis § Mitellaria, *Meisn.*; *Endl.*)

4. *M. pentandra* (Hook.): leaves all radical, cordate, slightly lobed, crenately serrate, scape slender, naked; calyx spreading; petals pectinate-pinnatifid.—*Hook.! bot. mag. t.* 2933, *& fl. Bor.-Am.* 1. *p.* 241; *Graham!*

in Edinb. phil. jour. 1829. Drummondia mitelloides, *DC. prodr.* 4. *p.* 49, excl. syn. Mitella trifida.

Moist alpine woods in the Rocky Mountains, *Drummond!*—Flowers about the size of those of M. nuda, greenish.

§ 4. *Stamens* 5, *alternate with the trifid scarcely exserted petals; filaments very short: calyx adherent to the middle of the ovary: stigmas somewhat capitate, undivided: placentæ parietal, many-ovuled: scape naked.*—MITELLINA. (Mitellopsis § Mitellina, *Meisn.; Endl.*)

5. *M. trifida* (Graham): leaves all radical, cordate, slightly lobed, crenate; scape slender, naked; calyx campanulate, the lobes spreading; petals cuneiform, deeply 3-cleft.—*Graham! l. c.; Hook.! l. c. t.* 82. Lithophragma nudicaule, *Nutt.! mss.*

Rocky Mountains, from near Smoking River, on the east side, in lat. 56° (*Drummond*) to the Blue Mountains of Lewis and Clarke's River, lat. 46°. (*Douglas.*)—Habit wholly that of the preceding species. Petals scarcely longer than the lobes of the calyx; both greenish-white.—Although the petals of this plant are 3-cleft, as in Lithophragma, yet we conceive it more properly placed in the present genus.

9. TIARELLA. *Linn.; Lam. ill. t.* 373; *Endl. gen. p.* 816.

Calyx campanulate, nearly free from the ovary, 5-parted; the lobes obtuse, valvate in æstivation. Petals 5, entire. Stamens 10, inserted with the petals into the base of the calyx: filaments filiform, exserted: anthers ovate, 2-celled. Styles 2: stigmas simple. Capsule membranaceous, 1-celled, with 2 parietal placentæ, 2-valved; the valves very unequal. Seeds few, near the base of the capsule (the others abortive), rather large, subglobose: testa crustaceous, smooth and shining.—Perennial herbs, with simple or trifoliolate incised and serrate leaves. Pedicels recurved in fruit. Bracts scarcely any. Flowers white.

§ 1. *Scape naked: raceme simple: petals oblong, unguiculate.*—EUTIARELLA.

1. *T. cordifolia* (Linn.): leaves cordate, acutely lobed, unequally dentate with mucronate teeth, hirsute with scattered hairs above, pubescent beneath; stolons creeping.—*Linn.! spec.* 1. *p.* 405; *Lam. ill. t.* 373, *f.* 1; *Michx.! fl.* 1. *p.* 271; *Pursh! fl.* 1. *p.* 313; *Bot. mag. t.* 1589; *Torr.! fl.* 1. *p.* 445; *Bigel.! fl. Bost. ed.* 2. *p.* 178; *DC.! prodr.* 4. *p.* 50.

Woods, Canada! to Pennsylvania! and the mountains of Virginia. April–May.—Caudex thick, sending out creeping stolons after flowering. Scapes 6–12 inches high. Pedicels slender. Calyx and petals white. Filaments long, flattened and slightly dilated above. Seeds ovoid, brownish. —*Mitre-wort.*

§ 2. *Stem leafy* (*leaves alternate*): *flowers paniculate: petals filiform or subulate.*—ANTHONEMA, Nutt. mss. (Blondia, *Necker?*)

2. *T. unifoliata* (Hook.): nearly glabrous; stem 1-leaved; leaves all triangular-cordate, 3–5-lobed; the lobes rather acute, obtusely serrate-toothed;

panicle loose; petals resembling the filaments.—*Hook.! fl. Bor.-Am.* 1. *p.* 238, *t.* 81.

Rocky Mountains near the source of the Oregon, and at Portage River, *Drummond!*—The panicle in the above-cited figure is more compound than in our specimens, and the leaves less deeply lobed.

3. *T. trifoliata* (Linn.): hirsutely pubescent or partly glabrous; stem 2–3-leaved (rarely naked, ex *Hook.*); leaves ternately divided or trifoliolate; the terminal leaflet rhomboid-ovate; the lateral somewhat trapezoidal; all incisely toothed; panicle slender; petals linear-filiform.—*Linn. amœn. acad.* 2. *p.* 351, *& spec.* 1. *p.* 406; *Pursh! fl.* 1. *p.* 313; *Willd.! spec.* 2. *p.* 659; *Seringe, in DC. l. c.*; *Bongard, veg. Sitcha, l. c. p.* 139; *Hook.! fl. Bor.-Am.* 1. *p.* 239. T. (Anthonema) rhombifolia, *Nutt.! mss.*

N. W. Coast, *Menzies!* Norfolk Sound, *Eschscholtz!* Sitcha, *Bongard*; and shady woods of the Oregon, near the coast, *Douglas! Nuttall! Mr. Tolmie!* and on the west side of the Rocky Mountains, *Drummond.*—This species was founded on Siberian specimens; and Mr. Nuttall suspects the American plant to be a distinct species: but the specimen of Pallas in Willdenow's herbarium is, if we mistake not, identical with ours; and Bongard remarks that he has compared the American plant with that from Siberia and Sitcha, and finds them wholly the same. He also corrects the mistake of Seringe in comparing the raceme to that of Mitella diphylla. The uppermost leaves are sometimes deeply 3-parted or only 3-lobed; the others with petiolulate segments or leaflets. Stems often reclined.

4. *T. laciniata* (Hook.): scabrous-hirsute; stem about 3-leaved; leaves 3-foliolate; the terminal leaflet deeply 3-cleft, the lateral ones 2-cleft; the segments broadly lanceolate, laciniate-pinnatifid; panicle loose; petals filiform and resembling the filaments. *Hook. fl. Bor.-Am.* 1. *p.* 239, *t.* 77.

N. W. Coast, *Menzies.*—Segments of the calyx acute.

10. ASTILBE. *Hamilton, ex Don, prodr. Nepal. p.* 210.

Hoteia, *Morr. & Decaisne.*

Calyx campanulate, or somewhat obconic at the base, 5-(rarely 4-) parted, somewhat coherent with the base of the ovary; the segments ovate, erect, imbricate in æstivation. Petals 5 (rarely 4), spatulate, inserted into the base of the calyx (sometimes none?), marcescent. Stamens 10 (rarely 8); filaments subulate, exserted: anthers cordate, 2-celled. Ovary 2-celled, with a central placenta: ovules numerous, ascending: styles short, at first united at the base: stigmas obtuse, papillose. Capsule somewhat coriaceous, 2-celled; the carpels at length separable and opening longitudinally along the inside. Seeds by abortion few (1–4) in each carpel, scobiform: testa membranaceous, loose, attenuate at each end. Embryo cylindrical, more than half the length of the abundant fleshy albumen: cotyledons thick, ovate.—Perennial herbs, resembling Spiræa Aruncus. Leaves 2–3-ternately or somewhat pinnately compound; the leaflets serrate: petioles dilated and stipuliform at the base. Racemes spicate, disposed in a crowded panicle. Flowers small, bracteate, yellowish-white.

We have drawn the character here given from the flowers of A. decandra, *Don*, the figure and description of Hoteia Japonica, *Morr. & Decaisne*, and from specimens of Spiræa barbata, *Wall.* from *Bot. reg. t.* 2011, which Lindley (*Bot.*

reg. Novem. 1839, *appx. p.* 83.) now refers to Hoteia Japonica, and adduces Astilbe rivularis, *Don*, as a synonym. If the genus Astilbe was founded on this plant, as we have reason to suppose, the petals must occasionally be wanting, as indeed Pursh remarks of our species, or they may have been overlooked; and the "capsula polysperma" may have been inferred from the numerous ovules. The resemblance to Spiræa Aruncus is so close that, according to Decaisne, the plant of Japan is described under this name in Thunberg's Flora Japonica; and our own species has been confounded with that plant in herbaria.

1. *A. decandra* (Don! l. c.); calyx (always 5-parted) nearly free from the ovary; leaflets cordate, incisely lobed and serrate, the lower surface and petioles somewhat glandular and hairy; petals linear-spatulate.—Tiarella biternata, *Vent. hort. Malmais. t.* 54; *Pursh! fl.* 1. *p.* 313; *Ell. sk.* 1. *p.* 513; *DC. prodr.* 4. *p.* 51. Hoteia biternata, *Morr. & Decaisne, in ann. sci. nat.* (*ser.* 2) 2. *t.* 11, *f.* 11. & 12. (the seeds.)

On the mountains of N. Carolina! S. Carolina; and of Georgia, *Dr. Macbride* ex *Ell.* June–Aug.—We find the petals in all the specimens we have examined, although they are often small and scarcely exceeding the calyx.

11. CHRYSOSPLENIUM. *Tourn.*; *Gærtn. fr. t.* 44; *Endl. gen. t.* 815.

Calyx-tube coherent with the ovary; the lobes 4–5, obtuse, colored within. Petals none. Stamens 8–10, inserted on the margin of the epigynous disk: filaments short, subulate: anthers reniform, 2-celled. Styles 2, distinct: stigmas simple. Capsule obcordate, compressed, 1-celled, with 2 parietal placentæ at the base, 2-valved at the summit. Seeds numerous: testa crustaceous. Embryo minute.—Annual or perennial low herbs, growing in mountain swamps and brooks, with fleshy alternate or opposite crenate leaves, and small yellowish-green flowers.

1. *C. alternifolium* (Linn.): flowering stems erect; leaves alternate, reniform-cordate, doubly crenate or somewhat lobed; flowers corymbose.—*Engl. bot. t.* 54; *Fl. Dan. t.* 366; *R. Br.! in Parry's* 1*st voy. suppl. p.* 275; *DC.! prodr.* 4. *p.* 48; *Hook.! fl. Bor.-Am.* 1. *p.* 241.

British North America to the Arctic Islands; and on the Rocky Mountains, *Drummond!* Bay of St. Lawrence, &c., *Chamisso.*

2. *C. Americanum* (Schwein.): stems slender, decumbent, dichotomous above; leaves opposite, the upper ones often alternate, roundish-ovate, obscurely crenate-lobed; flowers dichotomal, distant, sessile.—*Schweinitz, in herb. Hook.*; *Hook.! fl. Bor.-Am.* 1. *p.* 242; *Darlingt. fl. Cest. p.* 270. C. oppositifolium, *Michx.! fl.* 1. *p.* 269; *Pursh, fl.* 1. *p.* 269; *Torr.! fl.* 1. *p.* 445, not of *Linn.*

Shaded springs, &c. from Saskatchawan! and Northern States! to the mountains of Carolina. April–May.—Floral leaves yellowish. Calyx usually 4-cleft. Stamens usually 8, very short: anthers reddish-orange-color. Seeds hispid, reddish-brown. Certainly different from the C. oppositifolium of Europe, and a much less conspicuous plant.—*Golden Saxifrage. Water Carpet.*

3. *C. glechomæfolium* (Nutt.! mss.): "stems slender, ascending; leaves (deep-green) opposite, roundish, abruptly cuneiform at the base, crenate-dentate with numerous teeth; flowers [dichotomal or] somewhat corymbed, somewhat peduncled, rather distant; segments of the calyx short and obtuse."—C. oppositifolium *β. Hook.! l. c.*

Oregon, *Dr. Scouler! Nuttall!*—Hooker remarks that the leaves are exactly similar to those of C. Nepalense, *Don;* which (with C. Camtschaticum, *Fisch.*, C. dubium, *Gay*, and C. repens, *Link*) Chamisso and Schlechtendal think should not be separated from C. oppositifolium.

12. LEPUROPETALON. *Ell. sk.* 1. *p.* 370.

Lepuropetalum, *DC.; Endl.*—Cryptopetalum, *Hook. & Arn.*

Calyx-tube turbinate, coherent with lower portion of the ovary; the limb 5-parted; lobes ovate, obtuse. Petals 5, minute, spatulate, inserted into the tube of the calyx, persistent. Stamens 5, inserted alternately with the petals; filaments very short: anthers subglobose (orange-color), 2-celled. Ovary free at the summit, 1-celled, with 3 parietal bilamellate placentæ: styles short, distinct: stigmas simple. Capsule globose, 1-celled, many-seeded, loculicidally dehiscent at the free apex by 3 valves. Seeds numerous, oval, punctate with elevated dots: "albumen thin, fleshy. Embryo straight, central."—A very small annual herb (half an inch high), forming little hemispherical tufts, somewhat succulent, branching. Leaves alternate, spatulate, entire, almost veinless, marked (as also the calyx-segments) with minute brownish oblong dots. Flowers terminal, rather large for the size of the plant.

L. spathulatum (Ell.! l. c.)—*DC. prodr.* 4. *p.* 53. Cryptopetalum pusillum, *Hook. & Arn. in bot. misc.* 3. *p.* 344. Pyxidanthera spathulata, *Muhl. cat.*

In close soils, S. Carolina! and Georgia! to Texas! (Also at Quintero in Chili, *Bridges*, ex *Hook. & Arn.*) March–April—Elliott, and also Endlicher, describe the placentæ as attached to the margins of the valves, instead of their middle as is really the case. It is in the loculicidal dehiscence of the capsule, as Hooker and Arnott remark, that it chiefly differs from the other plants of the order.

[illegible] Ann. sci. nat. ser. 4, v. 2. p. 358. [illegible] the placentæ are on [illegible] affinity [illegible]

SUBORDER II. ESCALLONIEÆ. *DC.?*

13. ITEA. *Linn.; Richard, in Michx. fl.* 1. *p.* 156; *Gærtn. fr. t.* 209.

Calyx campanulate, short, free from the ovary, 5-cleft; the segments subulate. Petals 5, inserted on the tube of the calyx and much longer than its segments, lanceolate-linear, 1-nerved, erect-spreading, the points incurved, valvate in æstivation. Stamens 5, shorter than the petals, inserted alternately with them into the calyx: filaments subulate: anthers introrse, cordate-oblong, minutely apiculate, 2-celled. Ovary oblong, 2-celled, with a central placentæ: ovules numerous: styles short: stigma capitate, 2-sulcate. Capsule 2 celled, 2-sulcate, compressed, 2-partible with septicidal dehiscence. Seeds several (8–12), subcordate, flattish, with a thickish reticulated testa and a prominent raphe. Embryo cylindrical, in the axis of fleshy albumen.—A shrub, with simple alternate serrulate exstipulate? (minutely bistipulate, ex *Richard*) leaves, and simple terminal spicate racemes. Bracts subulate, caducous. Flowers white.

I. Virginica (Linn.!)—*Lam. ill.* 1. *t.* 147; *L'Her. stirp.* 1. *p.* 138; *Michx.! l. c.*; *Pursh! fl.* 1. *p.* 171; *Ell. sk.* 1. *p.* 293; *Torr.! fl.* 1. *p.* 248; *DC.! prodr.* 4. *p.* 6.
In wet places, New Jersey! and Pennsylvania! to Florida and Louisiana! May–June.—Shrub 4–8 feet high. Leaves about 2 inches long, on short petioles, oblong or oval, acuminate. Ovary and inside of the petals pubescent. Capsule oblong, acuminate with the style. Style furrowed, separating in two with the dehiscence of the capsule.—In the flowers and fruit, Itea seems to be related not so much to Escallonia as to Weinmannia and the allied genera, one of which (Caldcluvia, *Don!*) has simple undivided leaves.

SUBORDER III. HYDRANGEÆ. *DC.*

Æstivation of the petals valvate, with the margins sometimes induplicate. Capsule dehiscent at the summit between the styles when the latter are distinct, opening irregularly when these are united (rarely baccate).—Shrubs, with opposite simple exstipulate leaves.

14. HYDRANGEA. *Gronov.*; *Linn.*; *Lam. ill. t.* 307; *Gærtn. fr. t.* 30.

Flowers all fertile, or commonly the marginal ones sterile. STERILE FL. Calyx membranaceous, colored, veiny, flat and dilated, 4–5-parted. Petals, stamens, and pistils rudimentary or none. FERTILE FL. Tube of the calyx hemispherical, coherent with the ovary, 8–10-ribbed; the limb 4–5-toothed, persistent. Petals ovate, sessile. Stamens twice as many as the petals, and inserted with them into the margin of an epigynous ring: filaments filiform. Styles 2, distinct: stigmas small. Capsule crowned with the styles and the limb of the calyx, 2-celled (1-celled at the top), opening by a foramen between the styles. Seeds numerous, ascending; the testa conformed to the nucleus, striate or ribbed, membranaceous.—Shrubs (natives of N. America, Japan, Nepaul, and Java), with opposite mostly toothed or serrate leaves, and white or rose-color cymose flowers; the marginal ones usually sterile and radiant, showy.

1. *H. arborescens* (Linn.): leaves ovate or cordate, mostly acuminate, serrately toothed, puberulent or nearly glabrous; cymes fastigiate; flower-buds very obtuse.—*Linn.! spec.* 1. *p.* 397; *Lam. ill. t.* 370; *Bot. mag. t.* 437; *Willd.! spec.* 2. *p.* 633; *DC.! prodr.* 4. *p.* 14. H. vulgaris, *Michx.! fl.* 1. *p.* 268; *Pursh! fl.* 1. *p.* 309; *Ell. sk.* 1. *p.* 509; *Torr.! fl.* 1. *p.* 442; *Darlingt. fl. Cest. p.* 269.
α. vulgaris: leaves ovate, obtuse at the base; flowers commonly all fertile.—H. arborescens, *Linn.!* (*pl. Gronov.!*) H. vulgaris, *Michx.! &c.*
β. cordata: leaves broadly ovate, more or less cordate, large; a few of the marginal flowers radiate, sterile.—H. cordata, *Pursh! l. c.*; *DC. l. c.*
γ. oblonga: leaves ovate-oblong, mostly acute at the base; a few of the marginal flowers radiate, sterile.
δ. sterilis: flowers all sterile and radiate.

Shady banks of streams, Pennsylvania! to the mountains of Georgia! west to Missouri! *δ*. Wysox, Pennsylvania, *Mr. John Carey!* June–July.—Shrub 4–8 feet high; the young branches and cymes pubescent. Leaves 3–6 inches long; the veins pubescent on both sides.—*Common Hydrangea.*

2. *H. radiata* (Walt.): leaves ovate, mostly cordate, acuminate, sharply serrate; silvery-tomentose beneath; cymes fastigiate; flower-buds depressed; a portion of the marginal flowers radiate and sterile,—*Walt.! Car. p.* 251; *Willd.! spec.* 2. *p.* 634. H. nivea, *Michx.! l. c.; Pursh! l. c.; Ell. l. c.; DC.! prodr.* 4. *p.* 14.
In the upper country of S. Carolina! and Georgia! also in Tennessee. May–June.—Shrub 6–8 feet high. Sterile flowers large. In cultivation the flowers are said to become wholly sterile, and the leaves to lose a portion of the white tomentum of the lower surface.

3. *H. quercifolia* (Bartram): leaves deeply and somewhat sinuately 3–5-lobed, somewhat serrate, tomentose beneath; cymes thyrsoid-paniculate; sterile flowers very large, numerous.—*Bartr.! trav. p.* 336, *t.* 7; *Willd! spec. l. c.; Pursh! l. c.; Ell. l. c.; DC.! l. c.* H. radiata, *Smith, ic.* not of *Walt.*
Banks of streams, Georgia! to Florida! May–June.—Shrubs 4–5 feet high, showy. Leaves very large, variously lobed or sinuate, minutely serrate with salient teeth, when young tomentose; the upper surface at length nearly glabrous. Flowers in a large crowded thyrsus; the branches simple or dichotomous, bearing here and there little clusters of fertile flowers, and at its extremity a very large sterile flower. Sterile flowers often staminate; the sepals orbicular, dull white changing to reddish.—A showy species, not uncommon in gardens.

15. DECUMARIA. *Linn.; Lam. ill. t.* 403; *DC. prodr.* 3. *p.* 206.

Flowers all fertile and uniform. Tube of the calyx turbinate-campanulate, coherent with the ovary, 7–10-toothed; the teeth at length deciduous. Petals as many as the teeth of the calyx, ~~narrowly oblong, somewhat attenuate at the base~~, valvate) in æstivation, ~~with the margins more or less induplicate~~. Stamens thrice the number of the petals, inserted in a single series into an epigynous ring: filaments subulate-filiform. Ovary 5–10-celled, with numerous suspended scobiform ovules: stigmas thick (5?) 7–10, united in a disk, radiate. Capsule turbinate, 10–15-ribbed, the conical apex free, crowned with the persistent style, 5–7-celled (or as many cells as stigmas?), opening irregularly between the ribs; the endocarp and dissepiments thin, composed of fasciate oblique fibres: placenta persistent in the axis. Seeds numerous and imbricated, suspended from the inner angle of each cell by a subulate-attenuate base: testa membranaceous, reticulated, produced at the extremity opposite the insertion into a thickened obtuse and entire cellular appendage, about the length of the oblong nucleus. Embryo oblong-linear, terete, surrounded with a very thin granular albumen: cotyledons semiterete, nearly as long as the radicle; the latter directed towards the subulate extremity or hilum.—A sarmentose shrub, with opposite entire or somewhat toothed glabrous leaves (more or less marked with minute linear dots), and numerous white fragrant flowers, in compound terminal cymes.

This genus is allied, not so much to Philadelphus as to Deutzia (which Prof. Zuccarini has recently so ably illustrated in his and Siebold's *Flora Japonica*, and which he justly retains in Hydrangeæ), and especially to the interesting Schizophragma of the same author, (*Fl. Japon. t.* 26.) which is very nearly allied to Hydrangea itself, and yet does not differ essentially from Decumaria except in its radiate sterile flowers, if they may so be called, the rather smaller number of the floral organs, and the erect seeds.—In examining the contents of the capsule, with a good lens, we discovered an abundance of very minute acicular bodies, lying loose among the seeds and the fibrous portions of the dissepiments, which have entirely the appearance of acicular raphides. We have only examined dried specimens, and are unable to determine what is the organic situation of these bodies.

D. barbara (Linn.! spec. appx.)—*Willd.! spec.* 2. *p.* 850; *DC.! l. c.* D. barbara & sarmentosa, *Bosc, act. soc. hist. nat. Par.* 1. *p.* 76. *t.* 13; *Pursh, fl.* 1. *p.* 328; *Ell.! sk.* 1. *p.* 533. D. radicans, *Mœnch. meth. p.* 17. D. Forsythia, *Michx.! fl.* 1. *p.* 282. Forsythia scandens, *Walt.! Car. p.* 154.

In shady places along the margin of swamps, North Carolina! to Florida! and western Louisiana, Dr. Hale! May–June.—Stem climbing by rootlets, often ascending trees to considerable height. Leaves petioled, either broadly or oblong-ovate, rather variable in form, either acute at each end, or often rounded at the base, sometimes coarsely repand-toothed towards the apex. Stamens as long as the petals. Capsule strongly ribbed; the endocarp with the dissepiments separating from the chartaceous exocarp, thin and scarious, but rather firm, splitting when mature into innumerable band-like fibres, as in Schizophragma, *Zucc.*, except that the fibres pursue an obliquely descending course from the dorsal suture to the axis.* Placenta attenuate below, dilated (and when dry hollow) towards the summit of the capsule. Integument of the seed (arillus, *DC.*) apparently simple, and certainly the testa, not an arillus.

16. JAMESIA.

Flowers polygamous? Calyx campanulate, deeply 5-cleft, coherent with the ovary at the base only; the segments ovate-lanceolate, somewhat unequal, persistent. Petals 5, oblong, obtuse, narrowed at the base, concave, minutely pubescent within; the margins induplicate in æstivation. Stamens as many or twice as many? as the petals: filaments subulate, longer than the petals. Ovary ovoid-conical, 3- (or sometimes 4–5-) celled, at first incompletely (the dilated placentæ being scarcely coherent in the axis): ovules numerous, linear-oblong, ascending, imbricated: styles long, more or less united at the base, much exserted: stigmas small, terminal, truncate. Fruit unknown.—A shrubby plant, with opposite serrate petioled leaves, and small few-flowered axillary and terminal cymes; the branchlets, as well as the peduncles and calyx, clothed with simple soft hairs; the leaves canescent beneath. Flowers small.

J. Americana.

Along the Platte or the Canadian River, near the Rocky Mountains? *Dr. James!*—Shrub erect? with terete branches. Leaves, including the petioles,

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* Nearly the same structure is observable both in Hydrangea and in Philadelphus, but in these the fibres do not separate spontaneously.

1–2 inches long, ovate, simply serrate with broad mucronate teeth. Cymes shorter than the leaves: bracts subulate. Calyx persistent, cleft rather below the middle; the segments mostly acute, two of them somewhat narrower; one of the broader ones sometimes minutely 3-toothed at the apex. Petals twice or more the length of the calyx. Stamens deciduous. Styles more than twice the length of the ovary, much exserted beyond the calyx. Ovary free, except the base, the parieties rather thick and firm; the dissepiments very short; the placentæ lunate, at first distinct, many-ovuled.—We much regret that we have not more adequate materials for describing this plant. Our specimens were collected by Dr. Edwin James (in Long's Expedition), but the particular locality is not recorded. It is probably rare or very local, as no other botanist seems to have met with it. It appears to be an entirely distinct genus, to which we have applied the present name in commemoration of the scientific services of its worthy discoverer, the botanist and historian of 'Major Long's Expedition to the Rocky Mountains, in the year 1820,' and who, during that journey, made an excellent collection of plants under the most unfavorable circumstances.

SUBORDER IV. PHILADELPHEÆ.

Ord. Philadelpheæ, *Don, DC.* (excl. gen.)

Æstivation of the petals convolute. Capsule opening by loculicidal dehiscence.—Shrubs, with opposite and simple exstipulate leaves.

17. PHILADELPHUS. *Linn.; Lam. ill. t.* 420; *Gærtn. fr. t.* 35.

Tube of the calyx obovate-turbinate, adherent to the ovary; the limb 4–5-parted, persistent. Petals 4–5, broadly obovate, convolute in æstivation. Stamens 20–40, shorter than the petals: filaments filiform. Styles usually 4, more or less united, sometimes nearly to the summit: stigmas oblong or linear. Capsule mostly 4-celled, free at the summit, 4-valved, loculicidal; the placentæ projecting into the cells, many-seeded. Seeds pendulous and densely imbricated downwards on the thickened placentæ, scobiform; the testa membranous and loose, subulate-attenuate at the apex, and with a short lacerate appendage next the hilum. Embryo nearly the length of the thin fleshy albumen: radicle cylindrical, much longer than the oval flattish cotyledons.—Shrubs (natives of North America and Japan? or Central Asia?), with opposite often serrate exstipulate leaves, and large racemose-cymose or solitary (white) flowers.

1. *P. inodorus* (Linn.): glabrous; leaves ovate or ovate-oblong, obtuse at the base, acute or somewhat acuminate, triplinerved, entire or very nearly so; flowers (rather small) 1–3 at the extremity of the branches; segments of the calyx triangular-ovate, acute, about the length of the tube; style longer than the stamens.—*Linn. spec.* 1. *p.* 470 (*Catesb. Car.* 2. *t.* 84); *Walt. Car. p.* 146; *Willd. spec.* 2. *p.* 948; *Bot. mag. t.* 1478.

Carolina to Alabama, apparently confined to the upper country and somewhat rare. Near Milledgeville, Georgia, *Dr. Boykin!* Upper part of

Alabama, *Mr. Buckley!* May.—Whole plant glabrous. Flowers scentless.—This species appears to be little known in cultivation. The flowers are smaller and much less showy than P. grandiflorus.

2. *P. grandiflorus* (Willd.): more or less pubescent; leaves ovate or ovate-oblong, acuminate, dentate or denticulate with sharp teeth, triplinerved; flowers (large) 1–3 or more at the extremity of the branches, on slender pedicels; segments of the calyx ovate or ovate-lanceolate, conspicuously acuminate, much longer than the tube; style equalling or longer than the stamens.—*Willd.! enum.* 1. *p.* 511; *Pursh! fl.* 1. *p.* 329; *Ell. sk.* 1. *p.* 538; *Guimp. Otto, & Hayne, holz. t.* 44; *Schrad.! in DC. prodr.* 3. *p.* 206, *& in Linnæa*, 12. *p.* 43. P. inodorus, *Michx.! fl.* 1. *p.* 283. P. speciosus, *Schrad.! l. c.*

β. laxus: branches weak and pendulous; leaves (especially of the young branches) sharply toothed, the upper ones acute at the base and often entire; segments of the calyx much elongated and spreading in fruit; flowers 1–3, or often 6.—P. laxus, *Schrad.! l. c.; Lindl.! bot. reg.* (*ser.* 2) *t.* 39.

γ. floribundus: flowers 5–7.—P. floribundus, verrucosus, latifolius, & Zeyheri? *Schrad. l. c.* P. grandiflorus, *Bot. reg. t.* 570.

Along streams, Virginia! to Georgia! mostly in the upper country. April–May.—Shrub 6–10 feet high; the young branches long and flexible. Flowers nearly inodorous, showy, usually only 3 together in a wild state.—The several species of Schrader cited above, are certainly only varieties of our P. grandiflorus.

3. *P. hirsutus* (Nutt.): leaves ovate, acuminate, sharply serrate-dentate, 3-nerved from the base, scabrous-pubescent above, canescently hirsute with appressed hairs beneath, as well as the pedicels and calyx; flowers (small) 1–3, terminating the short branchlets, on very short pedicels; segments of the calyx triangular-ovate, about the length of the tube; style shorter than the stamens; stigmas short, connate.—*Nutt.! gen.* 1. *p.* 301; *DC.! prodr.* 3. *p.* 206. P. trinervius, *Schrad., in Linnæa*, 12. *p.* 47. P. pubescens, *Bosc.*

Tennessee, "on the rocky banks of French Broad River, near the Warm Springs," *Nuttall!*—A small shrub, with virgate branches; the flowers in a wild state smaller than in P. coronarius. Styles connate to the summit, but when old separable for one-third their length.

4. *P. Lewisii* (Pursh): leaves ovate, acute, 3–5-nerved from the base, the adult ones nearly entire and somewhat glabrous; flowers (small) racemose, on short pedicels; segments of the calyx ovate-lanceolate, acute, twice the length of the tube; style about the length of the stamens; stigmas 3–4, very long.—*Pursh! fl.* 1. *p.* 329; *Hook.! fl. Bor.-Am.* 1. *p.* 220 (partly).

Oregon, *Lewis! Douglas! Nuttall! Mr. Tolmie!* in open pine woods. Also near St. Barbara, California, fide *Nuttall.*—A low shrub, with slender branches spreading horizontally, somewhat hairy when young. Leaves small, the younger ones toothed; the adult ones often with a woolly tuft at the axils of the nerves beneath. Flowers much smaller than in P. inodorus, scentless. Fruit turbinate, 4-celled; but one of the stigmas often abortive.

5. *P. Gordonianus* (Lindl.): leaves ovate, acuminate, triplinerved, serrate-toothed, hairy; flowers (rather large, numerous) in 5–9-flowered compact racemes; segments of the calyx ovate, acuminate; style shorter than the stamens, deeply-cleft; stigmas short.—*Lindl.! bot. reg.* (*misc.* 1838. *no.* 23, *&*) *ser.* 2. *t.* 32. P. Oreganus, *Nutt.! mss.*

Shady woods, Oregon, common near the coast, *Douglas! Nuttall! Mr. Tolmie!* July.—Shrub 4–6 feet high. Flowers inodorous. Fruit large, more than half superior. Leaves often very coarsely serrate and more or less hirsute.

ORDER LXVII. HAMAMELACEÆ. *R. Br.*

Calyx 4–5-cleft, or truncate with 5–7 obscure callous teeth; the tube more or less adherent to the ovary. Petals 4–5, long and linear, inserted into the calyx alternate with its segments, with a valvate æstivation at the base, the apex spirally involute; sometimes none. Stamens either twice the number of the petals, those opposite the calyx-segments fertile, those opposite the petals sterile and scale-like; or (in Fothergilla) somewhat indefinite and all fertile: anthers innate or introrse, the cells usually opening by valves. Ovary composed of 2 coherent carpels, adherent at the base to the tube of the calyx, 2-celled, with usually a solitary pendulous ovule in each cell (rarely with several, of which all but one are deformed and sterile): styles 2 (sometimes by accident 3), distinct: stigmas simple. Capsule coriaceous or somewhat ligneous, 2-beaked, 2-celled, dehiscent at the summit. Seeds anatropous. Embryo straight, in the axis of the fleshy albumen: cotyledons foliaceous. —Shrubs with alternate petiolate feather-veined leaves; the veins running from the midrib straight to the margin. Stipules deciduous. Pubescence mostly stellate. Flowers in axillary or terminal nearly sessile fascicles or heads, sometimes polygamous.

TRIBE I. HAMAMELEÆ. *DC.*

Petals 4–5. Stamens 8–10, of which the alternate ones only are fertile: filaments very short. Ovules solitary in each cell.

1. HAMAMELIS. *Linn.; Juss. gen. p.* 288; *R. Br. in Abel, China, p.* 374; *Endl. gen. p.* 804.

Calyx 2–3-bracteolate at the base, 4-parted. Petals 4, ligulate, very long and narrow, marcescent. Fertile stamens 4, alternate with the petals: anthers adnate, introrse, 2-celled; the cells opening by an operculate valve. Sterile stamens 4, scale-like, opposite the petals. Styles 2, short. Capsule coriaceous or almost bony, the base coherent with the persistent calyx-tube, 2-celled, opening at the top by loculicidal dehiscence, the valves at length 2-cleft: endocarp coriaceous, separating and enclosing the seed, at length bursting elastically into 2 pieces. Seed one in each cell, oblong: testa shining, crustaceous.—Shrubs or small trees. Leaves on short petioles repandly crenate or entire. Glomerules axillary, nearly sessile. Petals yellowish. Flowers often polygamous.

1. *H. Virginiana* (Linn.): heads of flowers surrounded with a scale-like 3-leaved involucre: leaves obovate or oval, repandly sinuate-crenate, unequal or obliquely subcordate at the base, scabrous with minute elevated spots beneath, when young stellately pubescent.—*Linn. spec.* 1. *p.* 116; *Catesb. Car.* 3. *t.* 2: *Michx.! fl.* 1. *p.* 100; *Pursh, fl.* 1. *p.* 116; *Ell. sk.* 1. *p.* 219; *Nutt. gen.* 1. *p.* 107; *DC. prodr.* 4. *p.* 268; *Bart. fl. N. Amer. t.* 78; *Darlingt. fl. Cest. p.* 114; *Guimp. Otto, & Hayne, holz. t.* 75. H. macrophylla, *Pursh, l. c.* H. dioica, monoica, & androgyna, *Walt. Car. p.* 255.

β. parvifolia (*Nutt. l. c.*): leaves much smaller and more pubescent beneath.

In moist woods, Canada! to Louisiana! *β.* Mountains of Pennsylvania, *Nuttall.* New Orleans, *Drummond!* Oct.–Nov.—Stem 8–12 feet high: branches flexuous. Leaves on short petioles. Petals a little crisped, three-fourths of an inch in length. Ovary hirsute.—The flowers usually appear late in autumn, after the leaves have fallen (although sometimes not until the ensuing spring,) and its fruit is perfected the following year. Darlington remarks that the plant is generally polygamous, and that the flowers which want the stamens are generally apetalous also.—*Witch-Hazel.*

TRIBE II. FOTHERGILLEÆ. *DC.*

Petals none. Stamens somewhat indefinite (in Parrottia as many as the calyx-segments only), all fertile: filaments very long. Ovules solitary in each cell.

2. FOTHERGILLA. *Linn. f. suppl.*; *Lam. ill. t.* 840; *Juss. gen. p.* 408; *Michx. fl.* 1. *p.* 312.

Calyx campanulate, truncate, repandly 5–7-toothed. Petals none. Stamens about 24, inserted in a single series upon the very margin of the calyx: filaments long, somewhat clavate: anthers innate, 2-celled; the cells opening by 2 valves. Ovary adnate with the base of the calyx: styles 2 (rarely 3), filiform, distinct. Capsule cartilaginous, the base cohering with the calyx, 2-lobed, opening by 2 valves at the top; the valves 2-cleft. Seed one in each cell, bony.—A shrub, with somewhat the habit of Alnus. Flowers (white, odorous, appearing before the leaves) in short terminal amentaceous spikes. Bracts scale-like, imbricated, each covering a single sessile flower, at length deciduous.

F. alnifolia (Linn. f.! l. c.)—*Willd. spec.* 2. *p.* 1224; *Duham. arb.* 4. *t.* 26; *Bot. mag. t.* 1341 & 1342; *Nutt. gen.* 1. *p.* 304; *Ell. sk.* 1. *p.* 547; *Guimp. Otto, & Hayne, holz. t.* 16; *DC. prodr.* 4. *p.* 270. F. Gardeni, *Michx.! l. c.*; *Jacq. ic. rar.* 1. *t.* 100. Hamamelis monoica, *Linn.* ex *Smith.*

Margins of swamps and shady woods, Virginia! to Florida! March–April.—Shrub 2–4 feet high, with virgate branches. Leaves oval or obovate, acute or obtuse, more or less crenate near the summit, nearly glabrous or stellately-pubescent beneath. Stamens white, sometimes tinged with pink. Bracts in the lower part of the spike 3-cleft. Capsule canescently hirsute. —Several varieties have been distinguished from the form of the leaves, which vary greatly. We do not comprehend the meaning of the character "*antheræ hippocrepicæ*" of De Candolle. The anthers are short, roundish, or very slightly cordate; the cells open by a longitudinal cleft from top to bottom with two valves, which are easily separable from the connectivum.

ORDER LXVIII. UMBELLIFERÆ. *Juss.*

Calyx adherent to the ovary; the limb very small, 5-toothed or entire. Petals 5, inserted on the outside of the epigynous disk, usually inflexed at the point, the inflexed portion cohering with the lamina: æstivation somewhat imbricate or rarely valvate. Stamens 5, alternate with the petals, inflexed in æstivation: anthers ovate, introrse. Ovary composed of two (very rarely more) united carpels, invested with the coherent calyx, 2-celled, with a solitary suspended ovule in each cell: styles 2; their bases dilated and thickened into a fleshy body (*stylopodium*) which covers the top of the ovary: stigmas simple. Fruit consisting of 2 dry carpels (often termed *mericarps*), which adhere by their faces (*commissure*) to a common axis (*carpophore*), at length separating from each other, and suspended from the summit of the carpophore; each carpel indehiscent, marked with 5 longitudinal primary ribs, one opposite each petal and each stamen, and often with 5 alternating secondary ones: in the substance of the pericarp are usually several longitudinal canals or receptacles (*vittæ*), filled with a colored aromatic oil or turpentine, which are commonly lodged in the spaces (*intervals*) between the ribs, but sometimes opposite them. Seed anatropous, usually coherent with the carpel, rarely loose. Embryo minute at the base of the copious horny albumen.—Herbs, or rarely suffrutescent plants; the stems usually fistular and furrowed. Leaves alternate (or very rarely opposite), usually pinnately or ternately divided; the petioles mostly dilated and sheathing at the base. Flowers in umbels, usually with an involucre.

Series I. *The inner face of the seed and albumen plane, neither convolute nor involute.* (Subord. ORTHOSPERMÆ, *DC.*)

TRIBE I. HYDROCOTYLEÆ. *Spreng.; DC.*

Fruit laterally compressed. Carpels convex or (rarely) acute on the back: primary ribs 5, sometimes obsolete; the lateral ones either marginal or on the face of the commissure; the intermediate ones most prominent: secondary ribs sometimes persistent and filiform, sometimes almost or entirely wanting. Vittæ very seldom present. Seed flattish on the face.—Umbels simple or imperfectly compound.

1. HYDROCOTYLE. *Tourn.; Lam. ill. t.* 188; *DC. prodr.* 4. *p.* 59.

Margin of the calyx obsolete. Petals ovate, entire, acute, spreading; the point straight. Fruit flattened laterally. Carpels without vittæ: primary ribs 5, filiform; the dorsal and lateral ones often obsolete; the intermediate ones enlarged. Seed carinately compressed.—Herbaceous (rarely suffrutescent) plants, usually slender and aquatic, with creeping stems, and peltate or cordate leaves. Umbels simple. Involucre few-leaved. Flowers sessile or pedicellate, white.—*Navel-wort.*

1. *H. Americana* (Linn.): very glabrous and shining; leaves orbicular-reniform, somewhat lobed, doubly crenate; umbels nearly sessile, capitate, 3–5-flowered; fruit orbicular, 2-ribbed on each side.—*Linn.! spec.* 1. *p.* 234; *Michx.! fl.* 1. *p.* 162; *Rich. Hydr. f.* 10; *Ell. sk.* 1. *p.* 348; *Torr.! fl.* 1. *p.* 303; *DC.! prodr.* 4. *p.* 64.
Wet shady places, Canada! and Northern States! to the mountains of S. Carolina. June–Aug.—Stems filiform. Leaves thin, an inch or more in width, obscurely 7-lobed. Flowers in very small axillary umbels, greenish, often tinged with purple. Fruit very minute; the ribs filiform: intervals smooth and flat.

2. *H. interrupta* (Muhl.): glabrous; leaves orbicular, peltate, slightly doubly crenate; flowers in small capitate nearly sessile proliferous umbels; fruit acute at the base, 2-ribbed on each side.—*Muhl. cat. p.* 10; *Ell.! sk.* 1. *p.* 345; *DC.! prodr.* 4. *p.* 59. H. vulgaris, *Michx.! fl.* 1. *p.* 161; *Pursh, fl.* 1. *p.* 190; *Hook. fl. Bor.-Am.* 1. *p.* 257.
Wet places, common in the Southern States! New Bedford, Massachusetts, *Mr. T. A. Greene!* California, *Chamisso.*—Stems creeping. Leaves thin, 8–12 lines in diameter, sometimes with a slight sinus at the base: petioles 2–3 inches long. Peduncles longer than the petioles: whorls or umbels 4–8 flowered, on very short pedicels. Fruit nearly twice as broad as long, abruptly acuminate at the base.—Distinguished from H. vulgaris by the form of the fruit, which in that species is emarginate at the base.

3. *H. umbellata* (Linn.): glabrous; leaves peltate, orbicular, emarginate at the base, doubly crenate; scape usually longer than the petioles; umbel 20–30-flowered, sometimes proliferous; pedicels slender; fruit didymous, 2-ribbed on each side.—*Linn.! spec.* 1. *p.* 234; *Rich. Hydr. t.* 52, *f.* 3; *Ell! sk.* 1. *p.* 346; *Bigel. Bost. ed.* 2. *p.* 109; *DC.! prodr.* 4. *p.* 60. H. umbellulata, *Michx.! fl.* 1. *p.* 161.
Overflowed boggy places, and around ponds, Massachusetts (*Bigelow*) and New York (near Albany, *Beck & Tracy!*) and on Long Island! to Florida! and Louisiana! April–June.—Stems creeping or floating. Leaves 1–2 inches in diameter, coarsely crenate: petioles 2–8 inches long. Pedicels 3–5 lines long. Fruit somewhat tumid, emarginate at the base and summit.—To this doubtless belongs H. incrassatum, *Raf.* (not of *Ruiz & Pav.* H. fluitans, *DC. l. c.*)

4. *H. natans* (Cyrillo): glabrous, floating; leaves orbicular-reniform, with a narrow cordate sinus, obtusely and unequally 7–9-lobed, crenate; peduncles much shorter than the petioles; umbel capitate, 5–6-flowered; flowers on short pedicels.—"*Cyr. pl. rar. Neap.* 1. *t.* 6"; *Rich. Hydr. t.* 95, *f.* 20; *Cham. & Schlecht. in Linnæa,* 1. *p.* 273; *DC. prodr.* 4. *p.* 62.
St. Francisco, California, *Chamisso, Douglas!*—Leaves about an inch in diameter, excentrically peltate, repandly toothed: petiole stout, about 6 inches long. Umbel one-third of an inch in diameter: peduncle at length curved.—We have not seen the fruit.

5. *H. repanda* (Pers.): leaves reniform-cordate, repandly toothed; the younger ones and the petioles hairy, but at length glabrous; peduncles nearly half as long as the petioles, hairy; umbel capitate, mostly 3–4-flowered; involucre 2-leaved; fruit reniform, truncate, 4-ribbed on each side.—*Nutt.! gen. Pers. syn.* 1. *p.* 302; *Rich. Hydr. f.* 14; *Ell.! sk.* 1. *p.* 347; *DC.! prodr.* 4. *p.* 62. H. reniformis, *Walt. Car. p.* 113? *Poir. suppl.* 3. *p.* 21. H. ficarioides, *Michx. fl.* 1. *p.* 160, not of *Lam.* Glyceria repanda, *Nutt. gen.* 1. *p.* 177.

Margin of ponds &c. often in rather dry places, South Carolina! to Florida! and Louisiana!—Stem creeping, throwing up several leaves from each node. Leaves 1–2 inches long, somewhat coriaceous, often truncate at the base: petioles 3–6 inches long. Involucre of 2 concave bracts, nearly as long as the almost sessile flowers. Stamens shorter than the petals: anthers brown. Fruit with prominent ribs, somewhat reticulated.—According to Chamisso, this species is not distinct from H. Asiatica; but our specimens of the latter have thinner and broader leaves, very short peduncles, and more reticulated orbicular and emarginate fruit.

6. *H. ranunculoides* (Linn. f.): glabrous; leaves orbicular-reniform, 3–5-lobed, the lobes crenate; peduncles much shorter than the petioles; umbels 5–10-flowered; pedicels very short; fruit orbicular, smooth, very obscurely 2-ribbed on each side.—*Linn. f.! suppl. p.* 177; *Rich. Hydr. f.* 18; *Cham. & Schlecht. in Linnæa*, 1. *p.* 373; *DC. prodr.* 4. *p.* 65. H. cymbalarifolia, *Muhl. Cat.*; *Ell.! sk.* 1. *p.* 346. H. Americana, *Walt.?*

In water, Pennsylvania (*Muhlenberg*) and Virginia (*Mr. Ruffner!*) to Georgia! and Louisiana! July–Aug.—Stems creeping or floating. Leaves 1–2 inches in diameter, usually deeply 3-lobed; the middle lobe narrower and a little longer than the others: petioles 4–12 inches long. Peduncles 1–3 inches long: pedicels 1–2 lines in length. Fruit about a line and a half in diameter.

H. cordata of Walter appears, from a leaf in his herbarium, to be Villarsia trachysperma, *Ell.* (Limnanthemum, *Gmel.*)

2.? CRANTZIA. *Nutt. gen.* 1. *p.* 177; *DC. prodr.* 4. *p.* 70.

Calyx-tube subglobose; the margin obsolete. Petals roundish, entire, obtuse. Fruit subglobose; the commissure excavated, nearly orbicular, with 2 vittæ. Carpels unequal, with 5 filiform ribs; 3 of them dorsal and narrow, the others marginal and united with the thick corky margin which surrounds the fruit: intervals with single vittæ. Carpophore adnate, indistinct. Transverse section of the seed orbicular.—Very small glabrous creeping herbs, (natives of the United States and Buenos Ayres), with linear entire succulent leaves (or rather petioles without a lamina), marked with transverse lines. Umbels few-flowered, simple, involucrate. Flowers white or rose-color, perfect, pedicellate.

1. *C. lineata* (Nutt.): leaves cuneate-linear, obtuse, shorter than the peduncles.—*Nutt.! l. c.*; *DC.! prodr.* 4. *p.* 71. Hydrocotyle lineata, *Michx.! fl.* 1. *p.* 162; *Rich. Hydr. f.* 38; *Ell. sk.* 1. *p.* 347; *Torr! fl.* 1. *p.* 304. H. ligulata, *Bosc.* Elatine foliis oppositis, *Gronov.! Virg. p.* 62.

Muddy banks of rivers, near salt water, Massachusetts, Rhode Island! and Connecticut! to Louisiana! May–July.—Stems creeping and rooting in mud. Leaves erect, 1–2 inches long, about a line and a half wide at the summit, marked with 4–6 transverse lines. Umbels 8–12-flowered. Involucre 5–6-leaved. Fruit a line in diameter: commissure with a broad white corky margin. Vittæ red, conspicuous.—This genus does not accord with the present tribe except in habit; yet we are unwilling to establish a peculiar tribe for its reception.

3. BOWLESIA. *Ruiz & Pav. prodr. p.* 44, *t.* 34; *DC. prodr.* 4. *p.* 75.

Calyx-tube compressed, somewhat 4-angled; the limb 5-toothed. Petals elliptical, entire, acute. Styles filiform. Fruit didymous, much contracted at the commissure, turgid, somewhat pyramidal and 4-angled. Carpels without vittæ; the back flattened, with an oval outline: ribs obsolete. Seeds plane internally, slightly convex externally.—Slender herbs (mostly South American), scabrous with a stellate or simple pubescence. Leaves opposite! simple, lobed or toothed. Stipules lacerate, scarious. Umbels axillary, simple, few-flowered: flowers minute.

1. *B. lobata* (Ruiz & Pav.): decumbent, thinly clothed with fasciculate and stellate hairs; leaves reniform, 5–7-lobed; the lobes entire, rather obtuse; umbels with very short pedicels, 1–3-flowered.—*Ruiz & Pav. fl. Peruv.* 3. *t.* 251, *f.* 6, ex *DC. prodr.* 4. *p.* 75; *Hook. & Arn.! bot. Beechey, suppl. p.* 347.

Dark moist places about streams, California, *Douglas! Nuttall!* April. —① Stem 6–15 inches long, nearly simple; the nodes producing short branches. Leaves about three-fourths of an inch in diameter; the sinuses acute: lower petioles 1–2 inches long. Fruit densely hirsute with stellate hairs. Carpels rather smaller than a mustard seed, at first inflated, the calyx not adhering at the back, an empty space being left between it and the pericarp; the seed also occupies but a part of the carpel (the inner portion), so that a transverse section exhibits two cells, one formed by the non-adherence of the calyx at the back, the other the cavity of the inflated pericarp which is only partially occupied by the seed. At maturity the seed fills the cavity of the carpel, and the exterior cavity collapses, but the dorsal part of the calyx never adheres to the fruit.—We strongly suspect that B. tenera, *Spreng.*, to which Hooker & Arnott (in *Bot. misc.* 3. *p.* 346) refer B. geraniifolia, *Cham. & Schlecht.* and B. nodiflora, *Presl*, is not distinct from this plant.

TRIBE II. SANICULEÆ. *Koch; DC.*

Transverse section of the fruit somewhat orbicular. Carpels with 5 equal primary and no secondary ribs, or covered with scales or prickles, when the ribs are obliterated. Vittæ none, or numerous when the fruit is prickly. Seed flattish on the face.—Umbels fascicled or capitate, simple, or somewhat irregularly compound.

4. SANICULA. *Tourn.; DC. prodr.* 4. *p.* 84.

Calyx-tube echinate; the teeth somewhat foliaceous and persistent. Petals obovate, erect, connivent, with a long inflexed point. Fruit subglobose; the carpels not separating spontaneously, densely clothed with hooked prickles. Carpels without ribs: vittæ numerous. Carpophore indistinct. Seeds semiglobose.—Perennial herbs. Radical leaves with long petioles, palmately lobed; the lobes cuneate, incised and toothed towards the apex. Stem naked or nearly so. Umbel with few rays. Umbellets with numerous rays; the flowers polygamous. Leaflets of the involucre few and often lobed. Involucel of several entire leaflets.

1. *S. Marilandica* (Linn.): leaves digitately 5-parted; the segments incisely and mucronately serrate; middle one distinct to the base; the lateral ones slightly confluent at the base; sterile flowers pedicellate; teeth of the calyx entire.—*Linn.! spec.* 1. *p.* 235; *Michx.! fl.* 1. *p.* 162; *Ell. sk.* 1. *p.* 348; *Torr.! fl.* 1. *p.* 302; *DC.! prodr.* 4. *p.* 84; *Hook.! fl. Bor.-Am.* 1. *p.* 257. S. Canadensis, *Linn.! l. c.*

Woods and thickets, Canada! and Newfoundland! to South Carolina; and west to Arkansas! Oregon, *Douglas.* June–July.—Stem about 2 feet high, dichotomously branched at the summit. Middle segment of the leaves petiolulate. Umbel somewhat compound and proliferous. Flowers white or rarely yellowish: fertile ones nearly sessile, on pedicels 1–2 lines long. Calyx-tube echinate on every part.

2. *S. Menziesii* (Hook. & Arn.): leaves cordate, deeply 3-parted; the segments obovate-cuneate, variously lobed and incisely serrate; serratures mucronate and terminating in short hairs; umbels somewhat compound; sterile flowers subsessile.—*Hook. & Arn.! bot. Beechey, p.* 142, *& suppl. p.* 347; *Hook.! fl. Bor.-Am.* 1. *p.* 258, *t.* 90. P. Liberta, *Cham. & Schlecht. in Linnæa,* 1. *p.* 253?

Borders of woods, &c. Oregon, *Dr. Scouler! Nuttall!* California, *Menzies, Douglas.*—Root long and somewhat fusiform. Stem stout, branching above. Leaves 2–2½ inches in diameter: segments usually dilated and rounded, but sometimes rather acute. Flowers yellow.—Very nearly allied to S. Liberta, and scarcely distinguishable except by its nearly sessile sterile flowers. The Oregon plant differs from the Californian (on which the species was founded) in the leaves being more obtuse, with shorter hairs at the point of the serratures; but in other respects we can discover no essential difference. Mr. Nuttall, however, considers the Oregon plant as a distinct species, which he calls S. obtusa.

3. *S. laciniata* (Hook. & Arn.): stem branching from near the base; leaves deeply 2-parted, with a cordate outline; segments laciniately pinnatifid, narrow, setosely acuminate; umbels compound; involucre and involucels bipinnatifidly laciniate.—*Hook. & Arn.! bot. Beechey, suppl. p.* 347.

California, *Douglas!*—Stem divided into several spreading branches. Radical leaves on rather long petioles, much dissected; the ultimate lobes narrow, very acute and spreading: cauline leaves pinnatifid, with narrow subulately toothed segments.

4. *S. nudicaulis* (Hook. & Arn.): caulescent; leaves mostly radical, on very long petioles, cordate, 3-parted; segments broadly obovate, somewhat lobed, setosely toothed; the lateral ones 2-cleft; cauline leaves similar, two opposite ones at the base of the 3-rayed umbel; calyx-tube echinate.—*Hook. & Arn. bot. Beechey, suppl. p.* 347.

California, *Douglas.*—Among our Californian specimens of this genus, collected by Mr. Douglas, is one which we think must be this species; but it seems to be a variety of S. laciniata, with less divided leaves. We have it also from the same country, collected by Mr. Nuttall, under the name of S. palmata.

5. *S. bipinnatifida* (Dougl.): leaves bipinnatifid; the lower cauline ones opposite, on long petioles; segments remote, incisely serrate, decurrent on the acutely toothed rachis; peduncles elongated; umbels compound and somewhat proliferous; umbellets many-flowered; involucels very short.—*Hook.! fl. Bor.-Am.* 1. *p.* 358, *t.* 92.

Oregon, *Dr. Scouler, Nuttall! Mr. Tolmie!* June.—About a foot high. Leaves mostly radical, or springing from an elevated caudex, 3–4 inches long: segments narrowed at the base; the rachis winged and conspicuously dentate with mucronate salient teeth. Umbellets in very compact heads. Flowers all nearly sessile, purple.

6. *S. bipinnata* (Hook. & Arn.): stem slender; leaves bipinnately parted; divisions remote; the segments oblong, cuneate at the base, incisely and mucronately toothed; involucral leaves deeply 3-cleft; the segments narrow, toothed or laciniate; calyx-tube echinate above the middle, naked towards the base.—*Hook. & Arn.! bot. Beechey, suppl. p.* 347.

California, *Douglas!*—Stem a foot or more in height, much more slender than in any other North American species. Segments of the leaves about half an inch long, very acute. Umbellets about 3 lines in diameter, 5–6-flowered; the sterile flowers pedicellate.—S. graveolens of Chili is allied to this species; but differs in the obtuse segments of the leaves, much larger heads of flowers, &c.

7. *S. arctopoides* (Hook. & Arn.): stems very short, with several scapiform branches; leaves deeply 3-parted; the divisions pinnatifid or bipinnatifid; segments narrow and spreading; peduncles elongated; involucels 8–10-leaved, longer than the umbellets; calyx-tube naked towards the base.—*Hook. & Arn.! bot. Beechey, p.* 142, *& suppl. p.* 347; *Hook. fl. Bor.-Am.* 1. *p.* 258, *t.* 91.

Grassy plains near Monterey, California, *Douglas! Nuttall!* North West Coast, *Menzies.* March–April.—Plant 6–10 inches high. Leaves usually much dissected, with widely spreading lobes. Umbels simple. Leaflets of the involucel linear-lanceolate, spreading or reflexed. Sterile flowers numerous, pedicellate. Fruit armed with a few strong hooked prickles above the middle.—A remarkable species, with the habit of Arctopus Capensis.

5. ERYNGIUM. *Tourn.; Lam. ill. t.* 187; *Laroche, hist. Eryng.* 1808.

Flowers sessile, collected in dense globose or cylindrical heads. Calyx-tube roughened or papillose with scale-like vesicles; the lobes somewhat leafy. Petals connivent, oblong-obovate, emarginate, with a very long inflexed point. Styles filiform. Fruit obovate, nearly terete, squamate or tuberculate. Carpels semiterete, without vittæ or ribs. Carpophore adnate throughout with the carpels.—Herbaceous or sometimes suffruticose plants; the leaves often prickly. Flowers mostly blue or white, bracteate; the lower bracts mostly larger and involucrate; the others intermixed with the flowers and converted into paleæ or scales.

1. *E. diffusum* (Torr.): leaves all sessile and palmately parted; segments oblong, incisely serrate and spinose; stem dichotomously branched, diffuse; heads subglobose, nearly sessile; leaflets of the involucre 4–6, 3-cleft, a little longer than the heads; scales lanceolate, entire.—*Torr.! in ann. lyc. New York*, 2. *p.* 207; *DC. prodr.* 4. *p.* 91.

On the Canadian River, Arkansas, *Dr. James!*—♃ Stem about a span

[illegible]

long, branching from the base, thick and rigid, deeply striate. Leaves three-fourths of an inch long, coriaceous, the midrib very prominent underneath. Heads on very short peduncles in the forks of the stem, about half an inch in diameter. Calyx-tube clothed with minute vesicular pointed scales.

2. *E. coronatum:* cauline leaves palmately 5–7-parted; divisions pinnatifid-laciniate, with narrow spinose segments; leaflets of the involucre 9–12, lanceolate with 2–4 remote spiny teeth, twice as long as the globose heads; scales lanceolate, entire, spiny at the tip, twice as long as the flowers; the terminal ones leafy and crowning the head.

Texas, *Drummond!*—Stem apparently 3 feet or more in height, with erect branches. Radical leaves not seen: cauline ones 2–4 inches in diameter; the middle division considerably longer than the others. Heads about half an inch in diameter, crowned with several foliaceous spinose-dentate scales. Calyx-tube clothed with acute vesicular scales.

3. *E. Leavenworthii:* cauline leaves palmately 5–7-parted; the segments incisely and spinosely serrate; involucre about as long as the heads; the leaflets incisely pinnatifid; heads oblong-ovate, pedunculate, crowned with a leafy tuft; scales 3–7-cuspidate; lobes of the calyx pinnatifidly 3–5-cuspidate.

Red River, Arkansas, *Dr. Leavenworth!* Texas, *Drummond!*—Stem stout and apparently 1–2 feet high. Radical leaves wanting in our specimens: cauline ones about 2 inches long with spreading pungent segments. Peduncles an inch long. Heads (exclusive of the crown) an inch and a half long, and nearly an inch in diameter; the axis proliferous and bearing a tuft of leaves at the summit resembling those of the involucre. Calyx-tube clothed with obtuse scales.—The heads and upper part of the stem are usually of a bright violet-purple color.

4. *E. aromaticum* (Baldw.): decumbent; leaves pinnately parted; segments cuspidate, entire, cartilaginous on the margin; the 3 upper ones remote and broader; leaflets of the involucre 3-cleft; heads globose, pedunculate; scales tricuspidate.—*Baldw.! in Ell. sk.* 1. *p.* 344; *DC. prodr.* 4. *p.* 94.

Dry pine woods, East and Middle Florida, *Baldwin! Dr. Leavenworth! Mr. Alden!* Aug.–Nov.—Stems 10–18 inches long, several from one root, branching towards the summit. Leaves an inch long: segments usually in 3 pairs, spreading and somewhat recurved; the 2 lowest pairs setaceous and approximated to the stem. Heads nearly half an inch in diameter. Involucre 5–6-leaved. Calyx-tube covered with spherical vesicles.

5. *E. petiolatum* (Hook.): leaves lanceolate, attenuate into a long petiole, remotely ciliate-spiny; the uppermost narrow and sessile; stem dichotomous above or dwarfish and diffuse; involucral leaves and scales ciliate-spiny, rigid, both much longer than the subsessile globose heads.—*Hook. fl. Bor.-Am.* 1. *p.* 250.

Moist soils on the plains of the Wahlamet, Oregon, *Douglas, Nuttall!*—♃? Stem about 10 inches high, (or sometimes only 2–3 inches and branched from the base). Leaves somewhat coriaceous, with the veins nearly parallel, but anastamosing. Petioles 1–3 (6, *Hooker*) inches long. Heads (including the projecting scales) nearly an inch in diameter. Scales 2–3 times as long as the flowers. Calyx-tube clothed with imbricated acute scales.

6. *E. aquaticum* (Linn.): leaves broadly linear, with straight and simple parallel veins, remotely ciliate with soft spines; leaflets of the involucels (7–9), mostly entire, shorter than the ovate-globose pedunculate heads; scales entire.—*Linn. spec. ed.* 2. *p.* 336 (var. α.); *Jacq. ic. rar. t.* 347 (ex *DC.*); *Pursh, fl.* 1. *p.* 189; *Ell. sk.* 1. *p.* 342; *Bot. reg. t.* 372; *DC.! prodr.* 4.

(Sandy soil, mostly dry. Michaux's name is to be used.?

p. 95. E. yuccæfolium, *Michx.! fl.* 1. *p.* 164. E. Virginianum &c., *Pluk. alm. t.* 175, *f.* 4.

~~Swamps,~~ Virginia! to Florida! Illinois! Texas!—② ? Variable in size and in the breadth of the leaves; sometimes scarcely a foot high, with leaves 2–3 lines wide; and in favorable situations attaining the height of 4–6 feet, and the leaves an inch or more in breadth. Heads three-fourths of an inch long. Leaflets of the involucels rarely toothed. Calyx-tube with acute scales.—*Button Snake-root.*—Root bitter, aromatic and pungent, resembling in its medicinal properties the Seneca Snake-root, and highly esteemed as a diaphoretic and expectorant in the Southern States. *Ell.*

7. *E. Virginianum* (Lam.): leaves linear-lanceolate and linear, uncinately (rarely spinulose-) serrate; leaves of the involucre 7–8, usually longer than the heads, 3-cleft, or dentate-spiny; scales tricuspidate.—*Lam. dict.* 4. *p.* 759; *Laroche, Eryng. p.* 48, *t.* 19; *Pursh, fl.* 1. *p.* 189; *Ell. sk.* 1. *p.* 343; *DC.! prodr.* 4. *p.* 95. E. aquaticum, *Michx.! fl.* 1. *p.* 163. E. Plukenetii, *Ell. l. c. p.* 582. E. aquaticum, *β. Linn. spec.* (*ed.* 1.) 1. *p.* 232. Eryngium &c., *Pluk. alm. t.* 396, *f.* 3.

Swamps, New Jersey! to Florida! and west to Texas!—② Stem 1½–5 feet high, cymosely branched and often compound at the summit, fistulous. Radical and lower cauline leaves usually 5–10 lines wide, but sometimes very narrow, tapering at each end; the teeth often very remote and indistinct. Heads numerous, three-fourths of an inch in diameter, pale blue or nearly white. Scales sometimes entire, or with only a single lateral cusp. Calyx-tube imbricated with acute lanceolate vesicles.—This and the preceding species were confounded by Linnæus, and were first distinguished by Lamarck. [illegible]

8. *E. virgatum* (Lam.): leaves oval, membranaceous; the cauline ones on short petioles, toothed or acutely serrate; involucre (6–8-leaved) longer than the subglobose heads; scales tricuspidate.—*Lam. dict.* 4. *p.* 757; *Pursh, fl.* 1. *p.* 189; *DC. prodr.* 4. *p.* 94. E. ovalifolium, *Michx.! fl.* 1. *p.* 163; *Ell. sk.* 1. *p.* 343.

Damp places in pine barrens, South Carolina! to Florida! and west to Louisiana. July–Sept.—♃ Stem 1–3 feet long, erect or decumbent, dichotomously branched at the summit. Leaves reticulately veined: radical ones with petioles 1–2 inches long, entire or crenately toothed; cauline ones often subcordate; the serratures with a narrow cartilaginous border. Involucral leaves linear-lanceolate, either entire or with 2–4 spiny teeth. Heads half an inch in diameter. Flowers white or pale blue. Scales of the calyx-tube acute.

9. *E. Baldwinii* (Spreng.): stem prostrate, and often creeping, filiform, branching; leaves membranaceous; radical and lower cauline ones ovate, petiolate, entire or somewhat lobed, remotely and acutely toothed; upper cauline ones 3-cleft or 3-parted, usually sessile; the lateral segments narrower (often linear) and entire, middle one 2–3-toothed or entire; heads (very small) ovate, on axillary peduncles; involucre much shorter than the heads; scales subulate, entire.—*Spreng.! syst.* 1. *p.* 871; *DC. prodr.* 4. *p.* 92. E. gracile, *Baldw.! in Ell. sk.* 1. *p.* 345; *Nutt.! gen.* 1. *p.* 175; not of *Laroche*. E. integrifolium, *Walt. Car. p.* 112? [illegible]

β. involucre longer than the heads.—E. prostratum, *Nutt.! in DC. prodr.* 4. *p.* 92.

Pine woods from St. Mary's, Georgia, to St. Augustine, Florida, *Baldwin!* Southern Florida, *Dr. Burrows! Mr. F. Cozzens! β.* Moist soils, Milledgeville, Georgia, *Dr. Boykin!* Middle Florida, *Mr. Croom!* and *Dr. Chapman!* Kentucky, *Short!* Arkansas, *Nuttall!*—② ? Stem 6–18 long, branching from the base. Leaves 8–12 lines long; the lower cauline ones often

(Eryngi[illegible] [illegible]
than the plant here described [illegible] E. [illegible]
Short [illegible]
a slender [illegible]

opposite, furnished with several salient teeth: upper ones with the lateral segments approximated to the stem. Peduncles usually longer than the leaves. Heads about the size of a pepper-corn, when old somewhat cylindrical-ovate: involucre variable in length; in β. often several times longer than the head. Flowers blue. Calyx-tube vesicular-papillose.—Allied to E. Cervantesii, *Laroche.*

E. fœtidum (Linn. excl. syn. *Pluk.*) is not a native of the United States.

Strebanthus, Raf.! (in *Seringe, bulletin,*) is founded on Eryngium Baldwinii, and is incorrectly described, as the parts of the flower are not quaternary.

TRIBE III. AMMINEÆ. *Koch.*

Fruit evidently compressed laterally, and usually somewhat didymous. Carpels with 5 equal filiform and sometimes slightly winged primary ribs; the lateral ones marginal: secondary ribs none. Vittæ various. Seed gibbously convex on the back, and flattish on the face, or terete.—Umbels perfectly compound.

6. AMMI. *Tourn.; Koch, Umb. p.* 122; *DC. prodr.* 4. *p.* 112.

Margin of the calyx obsolete. Petals obovate, with an inflexed point, emarginate, or with 2 unequal lobes; the exterior ones frequently larger. Fruit laterally compressed, ovate-oblong. Carpels with 5 filiform equal ribs; the lateral ones marginal. Intervals with single vittæ. Commissure with 2 vittæ. Carpophore free, 2-parted. Seed terete-convex, flattish on the face. —Herbs, with a fusiform root, and pinnately divided or many-parted leaves. Umbels compound, many-rayed. Involucre many-leaved; the leaflets 3-cleft or pinnatifid. Involucels many-leaved; the leaflets undivided.

1. *A. majus* (Linn.): stem glabrous; leaves pinnately divided; segments cartilaginous on the margin, acutely serrate; lower ones lanceolate; the upper ones many-cleft, linear.—*DC. prodr.* 4. *p.* 112.
Newfoundland, *Pylaie,* fide *De Candolle.*

7. HELOSCIADIUM. *Koch, Umb. p.* 125; *DC. mem. Umb. p.* 37.

Margin of the calyx obsolete or 5-toothed. Petals ovate, entire, with a straight or inflexed point. Styles short. Fruit laterally compressed, ovate or oblong. Carpels with 5 filiform slightly prominent ribs; of which the lateral ones are marginal. Intervals with single vittæ. Carpophore entire, free. Seed gibbously or teretely convex, flattish on the face.—Herbaceous. Flowers white.

§ 1. *Aquatic, procumbent or creeping: leaves pinnately divided: involucre 1–3-leaved (rarely none): involucels 5–6-leaved.*—MAUCHARTIA, Necker.

1. *H. nodiflorum* (Koch): stem procumbent, striate; leaves pinnately divided; segments oblong, equally serrate; umbels opposite the leaves, sessile or on short peduncles; involucre none, or few-leaved, deciduous. *DC.*

prodr. 4. *p.* 105. Sium nodiflorum, *Linn. spec.* 1. *p.* 251; *Walt. Car. p.* 115; *Ell. sk.* 1. *p.* 355.

Wet places, very abundant around Charleston, South Carolina: probably introduced from Europe. Stem weak, diffuse, about 2 feet long. Upper leaves frequently ternate; leaflets acute. Involucre 1–3-leaved, sometimes wanting: leaflets lanceolate, reflexed: involucels 6–8-leaved. *Elliott.*—We have seen no specimens of this plant from any part of North America.

2. *H.? Californicum* (Hook. & Arn.): procumbent; leaves pinnately divided; segments 8–10, ovate, acute, incisely serrate; the lower ones pinnatifid or pinnate, with few segments; umbels lateral and terminal; involucres and involucels many-leaved; styles elongated. *Hook. & Arn. bot. Beechey, p.* 142.

California, *Capt. Beechey.*—Habit of H. repens of Europe, but is much larger, with more numerous and more divided pinnæ. It appears to depart from the generic character in having several leaves to the involucre and a long style. The fruit is essentially the same in both. *Hook. & Arn.*

§ 2. *Leaves ternately or bipinnately divided: involucre and involucels none: fruit glabrous.*—CYCLOSPERMUM, DC.

3. *H. leptophyllum* (DC.): glabrous, diffuse or somewhat erect; leaves ternately divided with narrowly linear segments; cauline ones subsessile; umbels opposite the leaves, subsessile; primary rays 2–3; partial umbels pedunculate; involucres and involucels none.—*DC.! mem. soc. Genev.* 4, & *prodr.* 4. *p.* 105. Sison Ammi, *Linn. spec.* 1. *p.* 252, ex *DC.* Pimpinella leptophylla, *Pers. syn.* 1. *p.* 324. Æthusa leptophylla, *Spreng. Umb. prodr. p.* 22; *Nutt.! gen.* 1. *p.* 190.

β.? latifolium: segments of the leaves broader.—*Hook. & Arn. bot. Beechey, suppl. p.* 347.

Alluvial soils, Louisiana, *Dr. Hale! Dr. Riddell! Drummond!* &c. Arkansas, *Nuttall! β.* California, *Douglas.*—① Stem 6 inches to 2 feet long, often divaricate, slender. Segments of the leaves almost capillary. Pedicels ¼–½ inch long. Fruit about the size of a mustard seed.

8. DISCOPLEURA. *DC. mem. Umb. p.* 38, *t.* 8 & 9.

Calyx-teeth subulate, persistent. Petals ovate, entire, with a minute inflexed point. Fruit ovate, somewhat didymous. Carpels with the 3 dorsal ribs filiform, prominent and rather acute; the 2 lateral ones united with a thick corky accessory margin. Intervals with single vittæ. Carpophore bifid. Seed somewhat terete.—Annual glabrous (North American) herbs. Leaves much dissected, with setaceous segments. Leaflets of the involucre pinnately 3–5-parted, or nearly entire. Flowers white.

1. *D. capillacea* (DC.): erect or procumbent; umbels 3–10-rayed; leaflets of the involucre 3–5, usually 3-cleft; fruit ovate.—*DC.! l. c. t.* 8, *A*, & *prodr.* 4. *p.* 106. Ammi majus, *Walt.! Car. p.* 113, not of *Linn.* A. capillaceum, *Michx.! fl.* 1. *p.* 164; *Ell. sk.* 1. *p.* 349; *Nutt.! gen.* 1. *p.* 179. Sison capillaceus, *Spreng.! in Schult. syst.* 6. *p.* 411; *Torr.! fl.* 1. *p.* 306.

β.? costata (DC.): larger; stem simple below; segments of the leaves somewhat verticillate; involucre 10–12-leaved; fruit deeply sulcate. *DC. l. c. t.* 8, *B.* Ammi costatum, *Ell. sk.* 1. *p.* 350.

Brackish swamps, rarely far from salt water, Long Island! to Georgia? *β.* Swamps on the Ogeechee River, Georgia, *Elliott.* July–Oct.—About a foot high (β. 4-5 feet, *Ell.*). Stem often much branched. Leaves ternately dissected, with numerous spreading segments. Involucral leaves sometimes 2-3-pinnatifid. Rays of the umbel seldom more than 8, an inch or more long. Umbellets shorter than the involucel. Fruit ovate, rather acute, about a line and a half in length.—We have not seen the Ammi costatum of Elliott.

2. *D. Nuttallii* (DC.): erect; umbels about 20-rayed; leaflets of the involucre mostly entire; fruit orbicular.—*DC. l. c. t.* 9, *& prodr.* 4. *p.* 107.
Wet prairies, Kentucky (*Short!*) to Louisiana! and Tampa Bay, East Florida! west to Texas!—Plant 2-6 feet high, branching above. Divisions of the leaves somewhat verticillate. Involucre commonly less than half the length of the rays; the leaflets sometimes 3-cleft. Fruit smaller than in the preceding species, rather broader than long.

9. LEPTOCAULIS. *Nutt. in DC. mem. Umb. p.* 39, *t.* 10, *& prodr.* 4. *p.* 107.

Margin of the calyx obsolete. Petals elliptical, entire. Fruit crowned with the styles, laterally compressed, ovate. Carpels with 5 slightly prominent ribs; the lateral ribs marginal. Intervals with single vittæ. Commissure with 2 vittæ. Carpophore slightly 2-cleft at the summit. Seed convex on the back, flat on the face.—Erect very slender (North American) glabrous herbs, with terete stems. Leaves many-cleft; the segments linear. Umbels pedunculate, opposite the leaves and terminal, with few rays. Involucre none. Rays of the umbellets few and unequal, with a short few-leaved involucel. Flowers small, white.

* *Fruit neither scabrous nor echinate.*

1. *L. inermis* (Nutt.): fruit unarmed, somewhat rugulose.—*Nutt.! in DC. mem. l. c. t.* 10, *f.* 2, *& prodr.* 4. *p.* 107.
Prairies of Arkansas, *Nuttall!*—Stem about a span high. Involucre wanting: involucels of 4-6 leaflets, as long as the partial rays. Rays of the umbel unequal, the longest scarcely half an inch in length, with 1 or 2 short-pedicellate flowers in the centre. Rays of the umbellets 2-3 lines long. Fruit rather smaller than a mustard seed, slightly ribbed, with minute intermediate rugæ.

* * *Fruit muricate or echinate.*

2. *L. diffusus* (Nutt.): fruit muricated with very short somewhat appressed scales; umbels and umbellets 3-4-rayed; pedicels filiform, two-thirds as long as the rays of the umbel.—*Nutt.! in DC. prodr.* 4. *p.* 107.
Prairies of Arkansas, *Nuttall!* Texas, *Drummond!*—Plant 8-15 inches high, very slender and divaricately branched. Rays of the umbel an inch or more in length. Fruit roughened with minute tubercles, which terminate in short scales or bristles.

3. *L. divaricatus* (DC.): fruit muricated with very short somewhat appressed scales; umbels 3-6-rayed; pedicels filiform, half the length of the rays of the umbel.—*DC. mem. l. c. t.* 10. *f. A*, *& prodr.* 4. *p.* 107. Daucus divaricatus, *Walt. Car. p.* 114. Sison pusillum, *Michx. fl.* 1. *p.* 168; *Ell. sk.* 1. *p.* 356. Ammi divaricatum & Ligusticum pusillum, *Pers. syn.* 1. *p.* 308 *&* 315. Æthusa divaricata, *Nutt.! gen.* 1. *p.* 190.
Dry sandy soils, South Carolina! and Georgia! March-April.—Stem 1-2

feet high, with spreading branches. Involucre wanting. Involucel of 2-3 minute leaflets. Rays of the umbel 8-14 lines long. Fruit muricated, as in the preceding species.

4. *L. patens* (Nutt.): muricate with minute tubercles; rays of the umbel and umbellets (4-8) very unequal, erect-spreading.—*Nutt.! in DC. prodr.* 4. *p.* 107.

Prairies of Arkansas, *Nuttall!* Louisiana, *Dr. Leavenworth!* Texas, *Drummond!*—Stem 1-2 feet high, branching above. Rays of the umbel 5-10 lines long, of the umbellets 2-4 lines.

5. *L. echinatus* (Nutt.): fruit echinate with spreading uncinate bristles; rays of the umbel 4-6, of the umbellets 6-10, slightly diverging.—*Nutt. in DC. prodr.* 4. *p.* 107.

Arkansas, *Nuttall.* Texas, *Drummond!* About a span high; the branches somewhat rigid. Rays of the umbel 5-6 lines long, of the umbellets 2-3 lines. Fruit armed with stiff whitish bristles, which are distinctly uncinate.

10. BUPLEURUM. *Tourn.; Linn.; Koch, Umb. p.* 114. *f.* 51 *&* 52*; DC. prodr* 4. *p.* 127.

Margin of the calyx obsolete. Petals somewhat orbicular, entire, with a broad closely inflexed retuse point. Fruit laterally compressed or somewhat didymous, crowned with the depressed stylopodium. Carpels with 5 ribs, which are either winged, acute, filiform, or obsolete; the lateral ones marginal. Intervals with or without vittæ, smooth or granulated. Seed teretely convex, flattish on the face.—Herbaceous or shrubby glabrous plants. Leaves rarely divided, usually by the abortion of the limb and dilatation of the petiole, changed into entire phyllodia. Involucres various. Flowers yellow.

1. *B. ranunculoides* (Linn.): radical leaves linear-lanceolate; cauline ones clasping, cordate-oblong, striate; involucre about 3-leaved, unequal; leaflets of the involucel 5, ovate, mucronate, nerved, distinct. *DC.*—*Linn. spec.* 1. *p.* 237; *DC. prodr.* 4. *p.* 131; *Hook. fl. Bor.-Am.* 1. *p.* 263. B. angulosum, *Spreng.*; *Hook. & Arn. bot. Beechey, p.* 124.

Cape Mulgrave in Behring's Straits, *Lay & Collie.*

2. *B. rotundifolium* (Linn.): leaves broadly ovate, entire, perfoliate; involucre none; involucels of 5 ovate mucronate leaflets; fruit with very slender ribs; intervals smooth, mostly without vittæ.—*Linn. spec.* 1. *p.* 236; *Engl. bot. t.* 99; *Beck, bot. p.* 145; *Darlingt. fl. Cest. p.* 191.

Fields and cultivated grounds, New York; Chester County, Pennsylvania. *Darlington*; Orange County, North Carolina, *Schweinitz.*—① Stem 1-2 feet high, branching. Leaves 1-2 inches long, glaucous beneath, perforated by the stem excentrically. Umbels of 5-9 rays. Involucels rather longer than the umbellets. Flowers greenish-yellow.—*Modesty. Thorough-wax.*

11. CICUTA. *Linn.; Lam. ill. t.* 195; *DC. prodr.* 4. *p.* 99.

Margin of the calyx 5-toothed; the teeth somewhat foliaceous. Petals obcordate; the point inflexed. Fruit roundish, laterally contracted, didymous. Carpels with 5 flattish equal ribs; the lateral ones marginal. Intervals filled with single vittæ. Commissure with 2 vittæ. Carpophore 2-parted. Seed terete.—Aquatic perennial glabrous (poisonous) herbs, with terete fistulous stems. Leaves 3-pinnately or 3-ternately divided. Involucre few-leaved or none. Involucels many-leaved. Flowers white.

1. *C. virosa* (Linn.): trunk of the root and lower part of the stem hollow and divided by transverse partitions; leaves tripinnately divided; segments lanceolate, serrate; umbels opposite the leaves and terminal. *DC.—Linn. spec.* 1. *p.* 255; *Engl. bot. t.* 1191; *DC. prodr.* 4. *p.* 99; *Hook. fl. Bor.-Am.* 1. *p.* 259.
Woody country, British America, between lat. 54° and 64°, *Dr. Richardson, Drummond.*—We have no North American specimens. Like the following species, it is exceedingly poisonous.

2. *C. maculata* (Linn.): root with thick oblong fleshy fibres; stem streaked with purple; leaves biternately divided; segments lanceolate, mucronately serrate; umbels terminal and axillary.—*Linn.! l. c.; Pursh, fl.* 1. *p.* 195; *Ell. sk.* 1. *p.* 357; *Bigel.! fl. Bost. ed.* 2. *p.* 115, *& med. bot.* 1. *t.* 12; *Torr.! fl.* 1. *p.* 308.
Swamps, Canada! to Georgia! and Louisiana! West to Oregon. July–Aug.—Stem 4–8 feet high, finely striate with green and purple, and sometimes spotted (in the shade often wholly green). Lower leaves on long petioles; the terminal division quinate or pinnate; segments more or less broadly lanceolate, all of them petiolulate, the primary veins running to the *notches* (instead of the *points*) of the serratures (as first noticed by Dr. Darlington). Rays of the umbel long and slender. Involucre usually none, or of 1–2 small leaflets. Involucels of 5–6 short linear leaves. Fruit about a line and a half in diameter, aromatic and somewhat resembling *anise*. Ribs broad, filled with a white cellular substance; the lateral ones much broader than the others.—*Water Hemlock. Spotted Cowbane. Beaver Poison. Musquash.*—The root is highly poisonous to men and cattle: the herb also is said to be poisonous.

3. *C. bulbifera* (Linn.): root with thick oblong fleshy fibres; axils of the branches bulbiferous; leaves biternately divided; segments linear and linear-lanceolate, remotely toothed; umbels terminal and axillary.—*Linn.! spec.* 1. *p.* 255; *Michx.! fl.* 1. *p.* 165; *Nutt. gen.* 1. *p.* 192; *DC.! prodr.* 4. *p.* 99.
Swamps, Canada! to Pennsylvania! August.—Stem 2–4 feet high, slender; the axils of the branches bearing small verticillate bulbs. Leaves usually very finely divided (especially in the infertile stems), with linear segments scarcely a line wide. Umbel with rather short slender rays. Fruit (according to Nuttall) scarcely distinguishable from that of the preceding species.—A somewhat rare plant, often sterile, and sometimes also without bulbs.

12. SIUM. *Linn.* (partly); *Koch, Umb. p.* 117; *DC. prodr.* 4. *p.* 124.

Margin of the calyx 5-toothed or obsolete. Petals obovate, emarginate, with an inflexed point. Fruit ovate, or subglobose and compressed at the sides, or contracted and somewhat didymous, crowned with the depressed stylopodium and recurved styles. Carpels with 5 rather obtuse ribs. Intervals usually with several vittæ. Carpophore 2-parted. Seed somewhat terete.—Perennial mostly aquatic herbs. Leaves pinnately divided; the segments usually ovate or lanceolate, toothed or serrate: submerged leaves divided into numerous capillary segments. Umbel many-rayed. Umbellets with numerous flowers. Involucre many- (or rarely 1-) leaved. Flowers white.—*Water Parsnep.*

1. *S. latifolium* (Linn.): root creeping; stem sulcate-angular; segments of the leaves lanceolate, acuminate, serrate, rarely pinnatifid; involucre many-leaved; teeth of the calyx elongated. *DC.—Linn. spec.* 1. *p.* 251; *Bigel. fl. Bost. ed.* 2. *p.* 111; *Torr.! fl.* 1. *p.* 311; *DC. prodr.* 4. *p.* 124; *Hook. fl. Bor.-Am.* 1. *p.* 262. S. occidentale, *Nutt. mss.*

β. leaflets deeply incisely serrate. *Hook.! l. c.*—S. argutum, *Nutt. mss.*

Swamps, British America (Saskatchawan), to New Jersey! and Pennsylvania (*Muhlenberg*). Oregon, *Nuttall.* *β*. Straits of Da Fuca, *Dr. Scouler!*—We have not recently had an opportunity of examining this plant in a living state, and, unfortunately, our specimens are without fruit. Mr. Nuttall distinguishes the American plant from the European species by its minute calyx-teeth, much smaller fruit, and acuminate leaflets; but in our (flowering) specimens the calyx-teeth are not much smaller than in the European plant, and the leaflets are not more acuminate.

2. *S. lineare* (Michx.): stem sulcate-angular; segments of the leaves (4–5 pairs) linear-lanceolate and linear, acutely and finely serrate; leaflets of the involucre 5–6, linear-lanceolate; calyx-teeth minute; fruit obovate.—*Michx.! fl.* 1. *p.* 167; *Nutt. gen.* 1. *p.* 186 (excl. syn. *Pursh*); *Torr.! fl.* 1. *p.* 311; *DC.! prodr.* 4. *p.* 125; *Hook. fl. Bor.-Am.* 1. *p.* 262. S. tenuifolium, *Muhl.! cat.* S. latifolium, *Darlingt. fl. Cest. p.* 190?

β. *intermedia:* leaves rather broadly lanceolate.

Swamps, Canada! to New Jersey! and Pennsylvania! Indiana, *Dr. Short!* Lake Huron, *Dr. Todd.* Oregon, *Dr. Scouler! Douglas.* *β*. Middle Florida, *Dr. Chapman!*—Stem 2–5 feet high. Segments of the leaves usually linear-lanceolate, but often linear and 1–3 lines wide. Rays of the umbel about 20. Leaflets of the involucre sometimes 2-cleft. Calyx-teeth very minute and partly concealed by the projecting margin of the stylopodium, sometimes nearly obsolete. Petals broadly obcordate, with a rather blunt inflexed point. Fruit strongly ribbed. Intervals usually with single vittæ, but sometimes with 2, which are closely approximated or confluent. Commissure with 2 vittæ.—This species is by many botanists considered as a variety of S. latifolium; but our European specimens of that plant differ in the broader segments of the leaves, the elongated lanceolate calyx-teeth, broader (almost orbicular) fruit, and in the greater number of vittæ. The S. lineare, in its few vittæ, deviates indeed from the generic character of Sium, as given by Koch and De Candolle. It nearly approaches S. lancifolium, *Bieberst*, but differs in the fruit.

3. *S. pusillum* (Nutt.! mss.): "root creeping; segments of the lower leaves oblong or ovate; of the upper ones linear, short, incisely serrate, with few serratures; involucre few-leaved; rays of the umbel 5–7; calyx-teeth obsolete.

"Wappatoo Island, Oregon.—Plant 6–8 inches high. Segments of the leaves about 4 pairs; the terminal one sometimes 3-lobed." *Nuttall.*—Our specimen is without fruit.

‡ *Doubtful Species.*

4. *S.? Douglasii* (DC.): stem terete; lower segments of the leaves 3-cleft; the others petiolulate, ovate-oblong, coarsely serrate; umbels opposite the leaves and terminal, pedunculate, many-rayed; involucre none.—*DC. prodr.* 4. *p.* 125; *Hook. fl. Bor.-Am.* 1. *p.* 263.

North West America, *Douglas.* Lower leaves a foot and a half long.—

Described by De Candolle from specimens (without mature fruit) collected in the garden of the London Horticultural Society. Hooker asks whether it may not be Cicuta maculata in a luxuriant state.

13. EDOSMIA. *Nutt. mss.*

Atænia, *Hook. & Arn.*

Margin of the calyx distinctly 5-toothed; the teeth lanceolate, persistent. Petals broadly obcordate, with a long inflexed point. Stylopodium small, depressed. Styles filiform, deflexed. Fruit oblong or roundish-ovate, laterally compressed. Carpels with 5 filiform equal slightly prominent ribs; the lateral ones marginal. Intervals filled with single thin vittæ. Commissure narrow, with 2 vittæ. Carpophore free, 2-cleft. Seed semiterete, nearly plane on the face.—Glabrous perennial herbs; the root bearing several oblong edible tubers. Stem terete, slender, with few ternately or simply pinnately divided leaves; the segments narrowly linear. Involucre none or minute. Involucels very small, of several setaceous leaflets. Fruit resembling in taste that of Cicuta maculata.

"Allied to Carum, particularly to C. Bulbocastanum." *Nutt.*—We have scarcely a doubt of the identity of this genus and Atænia of Hooker and Arnott; but we know not how these acute botanists overlooked the vittæ (which in our specimens are abundantly distinct), unless they examined very immature fruit. The name Atænia being therefore altogether inapplicable, we have felt obliged to adopt that proposed by Mr. Nuttall; trusting that our esteemed friends who first described the genus, will accord with us as to the propriety of doing so.

E. Gairdneri.

α. fruit broadly oval.—Atænia Gairdneri, *Hook. & Arn. bot. Beechey, suppl. p.* 349. Edosmia montana & præalta, *Nutt.! mss.*

β. fruit ovate-oblong.—Edosmia Oregana, *Nutt.! mss.*

California, *Douglas!* Plains of the Oregon and Wahlamet, and Rocky Mountains, *Nuttall!* Wappatoo Island, Oregon, *Nuttall!*—"Root bearing 1–2 (in *β.* 3–4) oblong-cylindrical tubers, which are sometimes pendulous by a narrow neck." *Nutt.* Stem 1½–4 feet high, in the tallest specimens scarcely as large as a goose-quill at the base, somewhat branched above, the upper part nearly naked, very smooth and even. Lower leaves on petioles of moderate length, which are somewhat dilated and sheathing at the base; the upper ones often undivided: segments almost filiform-linear. Umbels on long slender peduncles; the rays 6–12, an inch or more in length. Involucre either none, or consisting of several short subulate leaflets. Involucel of 7–9 leaflets, about two-thirds the length of the pedicels. Flowers white, slightly tinged with yellow or red. Fruit rather more than a line long (in *β.* longer), contracted at the commissure. Vittæ broad, filling up the whole space between the ribs, in *β.* often tumid.

14. NEUROPHYLLUM.

Margin of the calyx 5-toothed; the teeth lanceolate, persistent. Petals obovate, with an inflexed point. Stylopodium conical. Styles short, diverging. Fruit ovate, laterally compressed: dorsal ribs filiform, scarcely prominent: lateral ones marginal and keeled. Intervals with 3 vittæ. Commissure with 4 vittæ. Seed teretely convex, nearly plane on the face.—A tall and slender perennial glabrous herb. Leaves simply ternately divided; the segments very long, linear, entire; the under surface prominently 3–5-nerved: upper ones undivided. Umbels with long slender rays. Involucre of 2–4 subulate leaves, or nearly wanting. Involucels 5–6-leaved. Flowers white.

N. longifolium.

Swamps near Newbern, North Carolina, *Mr. Croom! Dr. Loomis!* Middle Florida, *Mr. Croom!* Sept.—Stems 3–4 feet high, smaller in diameter than a crow-quill at the base, prominently striate above. Radical leaves on narrow petioles, which are a foot or more in length, and scarcely at all dilated at the base: segments 5–8 inches long, and 1–2½ lines wide, tapering at each end, strongly margined, and marked with (usually 3) thick pale nerves underneath. Rays of the umbel 10, about 2 inches long. Fruit (not mature) about 1½ line in length, glabrous, crowned with the large stylopodium, and persistent calyx-teeth.—Except in the fruit, this plant agrees so minutely with the description of Peucedanum ternatum, *Nutt. gen.* 1. *p.* 182 (now referred to Archemora), and being also abundant near Newbern, the original locality of that plant, that we had supposed it must be the same, attributing the discrepancy in the fruit to our specimens not being sufficiently mature; but Mr. Nuttall and Dr. Pickering, having compared the two plants, assert that they are totally distinct. We have not seen the Archemora ternata; but the present plant cannot belong to that genus, nor to any other with which we are acquainted. Perhaps it rather belongs to the tribe Seselineæ than to Ammineæ.

15. CRYPTOTÆNIA. *DC. mem. Umb. p.* 42, *& prodr.* 4. *p.* 118.

Margin of the calyx obsolete. Petals obcordate, with an inflexed narrow point. Fruit linear-oblong, or ovate-oblong, contracted at the sides, crowned with the short stylopodium and straight styles. Carpels with 5 equal filiform obtuse ribs; the lateral ones nearly marginal. Vittæ very narrow, one beneath each rib and one in each interval. Seed somewhat teretely convex; the face slightly concave. Carpophore free, 2-cleft.—Perennial glabrous erect herbs. Root consisting of fasciculate fibres. Leaves 3-parted; the segments ovate, entire, or (particularly the radical ones) 2–3-lobed, doubly serrate, with coarse mucronate teeth. Umbels numerous, somewhat panicled. Rays of the umbel and umbellets very unequal. Involucre none. Involucels few-leaved. Flowers white.

1. *C. Canadensis* (DC.): umbels opposite the upper leaves and terminal; fruit oblong-elliptical.—*DC.! prodr.* 4. *p.* 119; *Hook.! fl. Bor.-Am.* 1. *p.* 262; *Darlingt. fl. Cest. p.* 189. Sison Canadense, *Linn.! spec.* 1. *p.* 252; *Michx.! fl.* 1. *p.* 168; *Bigel. fl. Bost. ed.* 2. *p.* 114. Sium Canadense, *Lam. dict.* 1. *p.* 407. Chærophyllum Canadense, *Pers. syn.* 1. *p.* 320; *Pursh, fl.* 1. *p.* 195; *Ell. sk.* 1. *p.* 358. Myrrhis Canadensis, *Nutt.! gen.* 1. *p.* 192; *Spreng. in Schult. syst.* 6. *p.* 516; *Torr.! fl.* 1. *p.* 310. Myrrhis Canadensis trilobata, *Moris. hist.* 9. *t.* 11, *f.* 4.

Woods and shady rich soils, Canada! to Georgia and Louisiana! June–Sept.—Stem 2 feet high, branching above. Leaves membranaceous; the segments 2–4 inches long and 1–2 inches wide, acute. Fruit one-third of an inch long, dark olive when mature, with paler slightly prominent ribs, crowned with the styles, which are about one-third the length of the carpels.

16. ZIZIA. *Koch, Umb. p.* 129 ; *DC. prodr.* 4. *p.* 99. (excl. spec.)

Pentacrypta, *Lehm.?*

Margin of the calyx obsolete, or with 5 very short teeth. Petals oblong, with a long inflexed point. Fruit contracted laterally, somewhat didymous, roundish or oval. Carpels with 5 filiform more or less prominent (but not winged) equal ribs; the lateral ones marginal: intervals with 1–3 vittæ. Commissure with 2–4 vittæ. Carpophore 2-parted. Seed very convex on the back, flat on the face.—Perennial (North American) herbs. Leaves ternately or biternately divided; the segments oblong or ovate. Involucre none. Involucels few-leaved. Flowers yellow.

§ 1. *Carpels with prominent ribs : intervals with single vittæ : commissure with* 2 *vittæ.*—EUZIZIA.

1. *Z. aurea* (Koch): segments of the leaves oblong-lanceolate, serrate; the terminal one attenuate at the base.—*DC.! prodr.* 4. *p.* 100 ; *Hook.! fl. Bor.-Am.* 1. *p.* 260 ; *Darlingt.! fl. Cest. p.* 185. Smyrnium aureum, *Linn. spec.* 1. *p.* 262 ; *Michx.! fl.* 1. *p.* 171 ; *Ell. sk.* 1. *p.* 359. Sison aureus, *Spreng. in Schult. syst.* 6. *p.* 410 ; *Torr.! fl.* 1. *p.* 305.

Woods and rocky hill-sides, Canada! to Georgia! and Louisiana! May.—Stem 1–2 feet high, branching towards the summit. Segments of the leaves 1–3 inches long; the lateral ones abruptly narrowed at the base; the serratures with callous points. Umbel 10–15-rayed: partial rays 2–3 lines in length. Involucels of 2–3 very small leaflets. Fruit elliptical, blackish when mature; the ribs angularly elevated.—We have from Mr. Nuttall and Mr. Schweinitz specimens of a Zizia (without fruit) from North Carolina, which they suppose to be the Sison trifoliatum of Michaux, and which the former botanist considers a distinct species (Z. trifoliata, *Nutt. mss.*); but we cannot distinguish it from some forms of undoubted Z. aurea. The S. trifoliatum, *Michx.*, according to his own herbarium, seems not to be distinct from his Smyrnium aureum.

§ 2. *Carpels with slightly prominent ribs : intervals with* 3 *vittæ : commissure with* 4 *vittæ.*—TÆNIDIA.

2. *Z. integerrima* (DC.): segments of the leaves oblong-ovate, entire.—*DC.! in mem. hist. nat. Genev.* 4, & *prodr.* 4. *p.* 100 ; *Darlingt. fl. Cest. p.* 187. Smyrnium integerrimum, *Linn.! spec.* 1. *p.* 263 ; *Michx.! l. c.* ; *Ell. l. c.* ; *Nutt. gen.* 1. *p.* 195. Sison integerrimus, *Spreng. l. c.* ; *Torr.! fl.* 1. *p.* 305.

Rocky woods and hill-sides, Michigan! New York! to Georgia and Arkansas! May–June.—Plant glabrous and slightly glaucous, 1–2 feet high. Leaves 2–3-ternately divided; the segments about an inch long, sometimes, especially the terminal one, 2–3-lobed. Umbels on slender peduncles; the rays long and slender. Involucels minute, of 1–3 subulate leaflets. Calyx minutely 5-toothed; the teeth at length deciduous. Fruit roundish-ovate, dark brown, nearly two lines long; the ribs very slightly prominent except in the dried state.—The fruit of this species, as well as its general appearance, differs so much from the preceding that it should probably be separated as a distinct genus.

TRIBE IV. SESELINEÆ. *Koch; DC.*

Transverse section of the fruit orbicular or nearly so. Carpels with 5 filiform or winged ribs, of which the lateral ones are marginal, and either equal with or a little broader than the others. Intervals with one or more vittæ, very rarely without any. Seed somewhat teretely convex on the back, flattish on the face.—Umbels perfectly compound.

17. THASPIUM. *Nutt. gen.* 1. *p.* 196; *DC. prodr.* 4. *p.* 153.

Calyx-teeth lanceolate, or nearly obsolete. Petals elliptical, attenuated into a long inflexed point. Styles slender, as long as the ovary, somewhat diverging. Fruit not contracted at the sides, elliptical. Carpels convex, with 5 winged mostly equal ribs. Intervals striate, with single vittæ. Commissure with 2 vittæ. Seed somewhat terete.—Perennial herbs. Leaves ternately or biternately divided; the radical ones sometimes undivided. Umbels terminal and opposite the leaves, without an involucre. Involucels 3-leaved, lateral. Flowers yellow or purple.

These plants accord in habit with Zizia (Z. aurea), from which Thaspium aureum is only to be distinguished by the fruit. Should the character of the genus be extended so as to include Zizia aurea, the latter name (Koch's character being changed), might be retained for Z. (Tænidia) integerrima, which on this account we have still left in connexion with Zizia.

1. *T. cordatum*: radical leaves usually simple, cordate, crenately toothed; cauline ones ternately divided; the segments ovate or ovate-oblong, serrate; winged ribs of the carpels equal.

α. flowers yellow.—Smyrnium cordatum, *Walt. Car. p.* 114; *Michx.! fl.* 1. *p.* 170; *Ell. sk.* 1. *p.* 359; *Torr.! fl.* 1. *p.* 307. S. trifoliatum, *Nutt. gen.* 1. *p.* 195, excl. syn. *Linn.* Zizia cordata, *Koch, Umb. p.* 129, ex *DC. prodr.* 4. *p.* 100; *Hook. fl. Bor.-Am.* 1. *p.* 260; *Darlingt. fl. Cest. p.* 186; *Hook. & Arn. bot. Beechey, suppl. p.* 347.

β. flowers dark purple.—Thapsia trifoliata, *Linn.! spec.* 1. *p.* 262. Smyrnium atropurpureum, *Lam. dict.* 3. *p.* 667; *Pursh. fl.* 1. *p.* 196. Thaspium atropurpureum, *Nutt.! gen.* 1. *p.* 196; *DC. prodr.* 4. *p.* 154. Cnidium atropurpureum, *Spreng. in Schult. syst.* 6. *p.* 418; *Torr.! fl.* 1. *p.* 307.

Woods, particularly along the banks of rivers, and in fields, Canada! and Saskatchawan, to Florida! and Louisiana! Oregon, *Mr. Tolmie.* *β.* New Jersey! and Pennsylvania! May–June.—Plant 1–2 feet high, usually glabrous, but sometimes minutely pubescent. Radical leaves 1–4 inches in diameter, sometimes lobed or 2–3-parted, on long petioles; the lower cauline ones on petioles 1–2 inches long; the uppermost ones nearly sessile: segments 1–3 inches long. Umbels with 9–12 rays, which are thick and scarcely more than an inch in length. Umbellets crowded. Involucels of 1–3 minute leaflets. Flowers in *β.* at first greenish, but at length dark purple. Fruit broadly ovate, dark purple with pale marginal ribs; the commissure broad, with 2 conspicuous vittæ.—The two varieties of this plant are generally considered as distinct species, and have even been referred to different genera by many botanists; but a careful examination has convinced us that they scarcely differ except in the color of the flowers. The specific name of Linnæus is so inapplicable that we have thought it inexpedient to substitute it for the very appropriate one given by Walter, which has been generally employed.

2. *T. aureum* (Nutt.): stem glabrous at the nodes; leaves all biternately divided; segments oblong-lanceolate, cuneate at the base, dentate-serrate; the margin of the serratures cartilaginous; carpels with the winged ribs nearly equal.—*Nutt. gen.* 1. *p.* 196. (excl. syn.?)

Pennsylvania? Springfield, Ohio, *Mr. T. G. Lea!*—Plant apparently 3–4 feet high, glabrous. Stem branching, finely sulcate. Cauline leaves on short petioles; the segments somewhat rhombic-lanceolate, 2–2½ inches long; the lateral ones sessile; the terminal one on a long petiolule. Principal umbel of about 10 rays; the rays an inch or more in length. Involucel of 2–3 short setaceous leaflets, or none. Fruit about 1½ line long: all the ribs conspicuously winged.—This species agrees minutely with the description of Nuttall's T. aureum (the locality of which is not given), and moreover appears to be a genuine Thaspium. It is probably rare, as we have only received it from a single locality.

3. *T. barbinode* (Nutt.): stem pubescent at the nodes; leaves 2–3-ternately compound; segments cuneate-ovate, unequally and incisely serrate, entire at the base; fruit elliptical or ovate; the 3 dorsal wings usually alternately narrower.—*Nutt.! gen.* 1. *p.* 196; *DC.! prodr.* 4. *p.* 154; *Darlingt. fl. Cest. p.* 192. Ligusticum barbinode, *Michx.! fl.* 1. *p.* 167; *Pursh, fl.* 1. *p.* 193. Thapsia trifoliata, (*Mill.?*) *Spreng. in Schult. syst.* 6. *p.* 615; *Torr. fl.* 1. *p.* 317. Apii species fl. luteis, *Gronov.! Virg. ed.* 1.

β. leaflets small; fruit narrowly and equally winged.

Banks of rivers, Chippewa, Upper Canada! to Georgia! Kentucky! and Arkansas! Florida, *Dr. Chapman!* June.—Plant yellowish-green. Stem about 2 feet high, branching above; the nodes and base of the petioles usually more pubescent. Leaves mostly biternately divided; the upper ones usually opposite: segments 1–2 inches long, (in *β.* about half an inch); the base, particularly of the terminal one, more or less cuneate, but sometimes obtuse. Umbels terminal (alar) as well as opposite the upper leaves, on peduncles 1–3 inches long: rays half an inch in length. Involucre usually wanting, but sometimes of 1–2 linear leaflets: involucels 3–4-leaved. Flowers deep yellow. Styles nearly erect, as long as the ovary. Fruit 2–3 lines long: one of the carpels usually with only the dorsal and the marginal ribs strongly winged; the other with the two intermediate and the marginal ribs winged: sometimes, however, all the ribs are equally winged.

18. ŒNANTHE. *Linn.* (partly); *Lam. ill. t.* 203; *DC. prodr.* 4. *p.* 136.

Œnanthe & Phellandrium, *Linn.*

Calyx-teeth lanceolate. Petals obcordate, with an inflexed point. **Fruit** cylindrical-ovate, crowned with the straight styles. Carpels more or less corky, with 5 convex obtuse ribs; the lateral ones marginal and broader. Intervals with single vittæ. Carpophore indistinct.—Glabrous herbs. Involucre various, often none. Involucels many-leaved. Flowers white; those of the circumference sterile and on long pedicels; the central ones sessile or nearly so, and fertile.

1. *Œ. sarmentosa* (Nutt.! mss.): "root fibrous; stem weak, stoloniferous; leaves bipinnately divided; segments ovate, acute; incisely serrate; the lower and terminal ones often 3-cleft; umbels terminal, and opposite the leaves, many-rayed; involucre none or few-leaved; fruit cylindrical-oblong; styles long and somewhat diverging.—Phellandrium aquaticum, *Pursh, fl.* 1. *p.* 195*?* excl. syn.

"Ponds and inundated places, Oregon, abundant.—The stalks when young are eaten raw by the Indians, and have a good deal the taste of *Celery.*" *Nuttall.*—Fruit about 2 lines long, somewhat corky. Commissure with 2 vittæ. Styles nearly as long as the carpels. Stylopodium small, conical.

19. CYNOSCIADIUM. *DC. mem. Umb. p.* 44, *t.* 11, *& prodr.* 4. *p.* 160.

Calyx-teeth subulate, persistent. Petals ovate or nearly orbicular, entire, with a short inflexed point. Stylopodium conical. Styles very short, recurved. Fruit ovate. Carpels with 5 thick obtuse ribs, of which the lateral ones are united with a thick corky accessory border. Intervals with single vittæ. Commissure with 2 vittæ. Seed teretely convex on the back, rather flat on the face. Carpophore free, 2-parted.—Glabrous (North American) annuals, with angular stems. Cauline leaves pinnately or palmately divided; the segments linear or linear-lanceolate: radical leaves undivided. Involucre and involucels few-leaved. Flowers white.

1. *C. digitatum* (DC.): lower leaves digitately 5-parted; upper ones 3-parted; petals ovate, with an inflexed point; fruit contracted into a neck near the summit; dorsal ribs very prominent.—*DC.! mem. l. c. t.* 11, *f. A*, *& prodr.* 4. *p.* 141.

Borders of ponds, and wet prairies, Arkansas, *Nuttall!* Louisiana, *Dr. Hale! Prof. Carpenter!* Texas, *Dr. Leavenworth!* May–June.—Stem 1–2 feet high, slender, somewhat branching above. Radical leaves often entire, and narrowly lanceolate. Umbels 6–10-rayed. Involucre of 5–6 linear leaflets. Fruit about 2½ lines long; the accessory margin very conspicuous. Intervals deep and narrow.

2. *C. pinnatum* (DC.): leaves pinnately divided; segments 2–3 pairs, distant; the terminal one very long; petals nearly orbicular, obtuse; fruit ovate-oblong; the ribs slightly elevated.—*DC.! l. c. t.* 11, *f. B*, *& prodr.* 4. *p.* 141.

Wet prairies, Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* Texas, *Drummond!*—Radical leaves often entire, or with 1–2 small pairs of segments. Flowers larger than in the preceding species. Fruit not attenuated at the summit; the ribs convex, with shallow intervals.

20. ÆTHUSA. *Linn.; Koch, Umb. p.* 111*; DC. prodr.* 4. *p.* 141.

Calyx-teeth obsolete. Petals obovate, emarginate, with an inflexed point. Fruit ovate-globose. Carpels with 5 acutely carinated ribs; the lateral ones marginal and a little broader. Intervals deeply acute-angled, with single vittæ. Commissure with 2 vittæ. Seed teretely-convex on the back, rather flat on the face. Carpophore 2-parted.—Annual erect poisonous herbs. Leaves many-cleft. Involucre none, or 1-leaved. Involucels 1–3–5-leaved, lateral, spreading or pendulous. Flowers white.

1. *Æ. Cynapium* (Linn.): segments of the leaves rather obtuse; involucre none; involucels 3-leaved, mostly longer than the partial umbels, pendulous; vittæ of the commissure distant at the base. *DC.—Linn. spec.* 1. *p.* 256; *Engl. bot. t.* 1192; *Bigel. fl. Bost. ed.* 2. *p.* 113.; *Beck, bot. p.* 145; *DC. prodr.* 4. *p.* 141.

Road sides and cultivated grounds, near Boston, *Bigelow!* Essex County, Massachusetts, *Mr. Oakes!* Amherst, in the same State, *Rev. Mr. Holton!* July–Aug.—Stem about 2 feet high, striate, not spotted. Leaves 2–3-pinnately divided, with narrow cuneate segments. Leaflets of the involucels linear. —The whole plant has an unpleasant smell, and is said to be poisonous.—*Fool's Parsley.*

21. LIGUSTICUM. *Linn.; Koch, Umb. p.* 104, *f.* 44–47; *DC. prodr. l. c.*

Calyx-teeth minute or obsolete. Petals with very short claws, obovate, emarginate, with an inflexed point. Fruit somewhat terete or slightly compressed laterally. Carpels with 5 acute equal somewhat winged ribs; the lateral ones marginal. Intervals and commissure with numerous vittæ. Carpophore 2-parted. Seed somewhat semiterete.—Mostly perennial herbs. Leaves ternately or 2–3-ternately divided. Involucre various. Involucels many-leaved. Flowers white.—*Loveage.*

1. *L. Scoticum* (Linn.): stem nearly simple, striate; leaves biternate; segments rhombic-ovate, coarsely dentate-serrate; involucre 4–6-leaved; calyx distinctly 5-toothed.—*Linn. spec.* 1. *p.* 250; *Engl. Bot. t.* 1424; *Michx. fl.* 1. *p.* 166; *Pursh, fl.* 1. *p.* 166; *Bigel.! fl. Bost. ed.* 2. *p.* 111; *Torr.! fl.* 1. *p.* 312; *DC. prodr.* 4. *p.* 157; *Hook.! fl. Bor.-Am.* 1. *p.* 265.

Borders of salt marshes, Labrador! Newfoundland! and Canada! to Massachusetts! North West Coast, from Behring's Straits to the mouth of the Oregon!—Root fusiform, perennial. Stem 1–2 feet high, flexuous. Leaflets 1–2½ inches long, entire and cuneate at the base, somewhat shining. Fruit about 4–5 lines long, narrowly elliptical; the intervals with 3, the commissure with 6 vittæ. Styles very short, diverging.

2. *L. actæifolium* (Michx.): leaves triternately divided; segments ovate, equally dentate-serrate; umbels numerous, forming a loose naked somewhat verticillate panicle; involucre and involucels of 2–4 short subulate leaflets; fruit ovate-oblong; intervals with 3 vittæ; the commissure with 6 vittæ; calyx-teeth minute; styles very short.—*Michx.! fl.* 1. *p.* 166; *Pursh, fl.* 1. *p.* 193. Thaspium actæifolium, *Nutt.! gen.* 1. *p.* 196; *DC. prodr.* 4. *p.* 155. Angelica lucida, *Ell. sk.* 1. *p.* 35? not of *Linn.* A. lobata, *Walt. Car. p.* 115? Ferula Canadensis, *Linn. spec.* 1. *p.* 247. (*pl. Gronov.!* not of *hort. Ups.*) Angelica lucida Canadensis, &c. *Gronov.! Virg. ed.* 1.

Banks of the St. Lawrence, *Michaux!* Virginia, near Staunton, *Pursh.* Woods near Salem, North Carolina, *Schweinitz!* Milledgeville, Georgia, *Dr. Boykin!* Mountains of Rock Castle River, Kentucky, *Dr. Short!*—Plant 3–6 feet high. Root large, "with the strong odor of Angelica." *Short.* Leaves mostly radical: primary divisions of the petiole elongated and naked at the base (3–4 inches long); segments broadly ovate, 2–3 inches long, the terminal one often 3-parted. Umbels on long verticillate peduncles, all but the terminal one usually abortive or nearly so (as in Peucedanum verticillare, *Koch*). Fruit (immature) about 2 lines long.—The Southern plant is possibly distinct from that of Canada; but the two agree minutely in the fruit. Mr. Schweinitz thinks it is the true *Nondo* or *White-root* of the Southern States, the roots of which are a favorite food of hogs.

22. CONIOSELINUM. *Fisch. in Hoffm. Umb. ed.* 2. *p.* 185. *tit. f.* 5. (ex *DC. prodr.* 4. *p.* 163.)

Calyx-teeth obsolete. Petals obcordate or obovate, with an inflexed point. Styles slender, at length reflexed. Fruit convex, or compressed on the back. Carpels with 5 winged ribs; the lateral ones twice as broad as the others and marginal. Lateral intervals with 3 vittæ: dorsal ones often with 2 vittæ. Commissure with 4–8 unequal vittæ. Carpophore 2-parted. Seed flat on the face. Biennial glabrous herbs, with branching and fistulous stems. Leaves with very large inflated petioles, ternately divided; the divisions bipinnately parted, with oblong-linear lobes. Involucre none, or few-leaved. Involucels of 5–7 linear-subulate leaflets. Flowers white.

1. *C. Fischeri* (Wimm. & Grab.): fruit elliptical-oblong; dorsal ridges broadly winged, the dorsal intervals with 2–3 vittæ.—"*Wimm. & Grab. ex Flora, Apr.* 1828, *p.* 215"; *DC. prodr.* 4. *p.* 266. Ligusticum Gmeleni, *Cham. & Schlecht. in Linnæa,* 1. *p.* 391. Angelica foliolis pennatifidis, *Gmel. fl. Sibir.* 1. *p.* 195, *t.* 44.

Labrador, Arctic America, Kotzebue's Sound, and Straits of Da Fuca, *Hooker*. Sitcha, *Bongard*.—We have seen no American specimens of this plant. C. Ingricum, *Fisch. mss.* (which is doubtless the same species, and of which we have an authentic specimen) is a stout plant with the habit of Conium maculatum; the rays of the umbel very numerous; the fruit decidedly longer and narrower than in C. Canadense; with smaller and flatter vittæ; of which there are 2–3 in each interval, and 4–6 in the commissure.

2. *C.? Canadense:* fruit broadly oval; dorsal ridges narrowly winged; vittæ 2–3 in the lateral intervals, solitary in the dorsal ones.—Selinum Canadense, *Michx.! fl.* 1. *p.* 165; *Pursh, fl.* 1. *p.* 192. Cnidium Canadense, *Spreng. in Schult. syst.* 6. *p.* 415 (excl. syn.); *DC. prodr.* 4. *p.* 153.

Shady wet places, Oneida County, New York, *Dr. Kneiskern!* Castleton, Vermont, *Dr. Tully!* Southern Shore of Lake Superior, *Dr. Pitcher!* Mouth of the River St. Lawrence, *Michaux!* Aug.–Sept.—Stem 3–5 feet high, terete, finely striate. Leaves with inflated sheathing petioles; the divisions pinnately compound; segments pinnatifid; the lobes linear-oblong. Umbel of 10–16 rather slender spreading rays, which are about 2½ inches long. Involucre none, or of 2–3 subulate leaflets. Involucels 5–6-leaved, nearly as long as the umbellets. Styles slender, diverging. Calyx-teeth nearly obsolete. Petals much spreading, emarginate and somewhat unguiculate; the point short and inflexed. Fruit about 2 lines long, much compressed on the back; the lateral ribs dilated into a conspicuous wing. Vittæ of the lateral intervals sometimes solitary, but usually 2 and rarely 3, often anastamosing; those of the commissure at least 4, but often several other shorter ones, and occasionally another at the margin of the wing.—We refer this plant to Conioselinum with some doubt; as the dorsal ribs are but slightly winged, and the vittæ are less numerous than in the species on which the genus was founded.

TRIBE V. ANGELICEÆ. *Koch; DC.*

Fruit dorsally compressed, with a double winged margin. Carpels with the 3 dorsal ribs filiform or winged; the lateral ones dilated

and forming the winged margins. Seed convex on the back, flattish on the face.—Umbels compound.

23. ANGELICA. *Linn.* (partly); *Hoffm. Umb.* 1. *p.* 158; *Koch, Umb. p.* 99, *f.* 20, 21; *DC. prodr.* 4. *p.* 167.

Calyx-teeth obsolete. Petals lanceolate, entire, acuminate; the point straight or incurved. Fruit dorsally compressed. Carpels with 3 elevated filiform dorsal ribs: lateral ribs forming marginal wings. Intervals with single vittæ. Commissure with 2–4 vittæ. Carpophore 2-parted. Seed semiterete.—Perennial or biennial herbs. Petiole 3-parted; the divisions bipinnately divided. Umbels terminal. Involucre none, or few-leaved. Involucels many-leaved.

1. *A. arguta* (Nutt.! mss.): "stem striate and glabrous; divisions of the leaves pinnately, and some of them bipinnately, divided; the segments ovate, glabrous, rather acute, serrate, the terminal one 3-cleft or deeply 3-parted; involucre and involucels none; fruit (large) oblong-elliptical."

Wappatoo Island, and near Fort Vancouver, Oregon, *Nuttall!*—Segments of the leaves 1–1½ inch long, sessile, or slightly petiolulate. "Rays of the umbel 50–60. Petals short, elliptical, with a conspicuous inflexed point." *Nutt.* Fruit greenish-white, 3 lines long; the dorsal ribs slightly elevated, not winged; lateral ones with wings as broad as the seed. Intervals with single conspicuous vittæ. Commissure with 2 distant vittæ.—Nearly allied to A. sylvestris, but differs in wanting the involucre and involucels.

2. *A. genuflexa* (Nutt.! mss.): "stem striate and glabrous; divisions of the leaves pinnately or bipinnately divided; the segments ovate-lanceolate, acuminate, unequally and coarsely serrate, sessile; involucre none; involucels about 7-leaved; fruit nearly orbicular."

With the preceding; also in mountain rivulets east of Wallawallah, *Nuttall!*—Stem apparently 4–5 feet high. Sheaths of the leaves somewhat dilated. "Divisions of the leaves, particularly of the lower ones, often angularly deflexed." Leaflets 2–4 inches long, membranaceous, almost incisely serrate. Umbel of 30–40 elongated slender rays; the rays and peduncle pubescent. Petals obovate, with an inflexed point. Fruit about 2 lines long; dorsal ribs slightly elevated; the lateral ones dilated into a broad wing. Commissure with 2 distant vittæ.—We have a specimen (without fruit) of what appears to be the same plant, collected in Oregon by Dr. Scouler.

3. *A. lucida* (Linn.): leaflets ovate, equal, incisely serrate. *Linn.* (*hort. Cliff.!*) *spec.* 1. *p.* 251; *Jacq. hort. Vindob.* 3. *t.* 24, fide *Spreng. in Schult. syst.* 6. *p.* 604; *DC. prodr.* 4. *p.* 168. Angelica lucida Canadensis, *Cornut. Canad. t.* 197.

Canada, *Cornuti.* (v. sp. in *herb. Vaillant!*)—"Wholly glabrous. Root an inch thick, with the odor of Parsley, acrid, perishing the second or third year. Stem 1–2 feet high, about as thick as one's finger, erect or flexuous, branched, fistulous, striated above. Radical leaves 3-, the cauline 2-pinnate; leaflets lanceolate or ovate, rather acute, dark green and shining on the upper surface, very smooth underneath; the terminal ones confluent. Umbels and umbellets convex, dense; the rays striated. Involucre of 5 narrow lanceolate leaflets; those of the involucel equal in number to the rays, subulate, acuminate. Petals equal, widely spreading, ovate, with the point acute and inflexed, of a dirty white color. Filaments twice as long as the corolla. Ovary deep green at the summit. Seeds [carpels] fuscous, of a hot taste, with 3 elevated nearly parallel striæ on one side; the border winged and membranaceous." *Jacq.* ex *Schult. l. c.*—This plant has been common in the gardens of Europe for 200 years, and appears to have been introduced by Cornuti, on whose authority alone it stands as a North American species. It is a genuine Angelica, according to authentic specimens which we examined in the herbarium of the *Hortus Cliffortianus*, and that of Vaillant. The segments are ovate, about an inch long, sessile, unequally serrate, and mostly decurrent or confluent at the base. The rays of the umbel are unusually thick; the involucels of about 8 lanceolate-spatulate leaflets. Fruit (immature) ovate: dorsal ribs slightly winged; the lateral ones dilated into a distinct wing. Vittæ very large and filled with a pungent oil. Commissure with 2 vittæ.

24. ARCHANGELICA. *Hoffm. Umb.* 1. *p.* 166. *f. tit.* 19, 20; *Koch, umb. p.* 98, *f.* 17–19, ex *DC. prodr.* 4. *p.* 169.

Calyx-teeth short. Petals elliptical, entire, acuminate, with the point incurved. Fruit somewhat dorsally compressed. Carpels with 3 rather thick carinated dorsal ribs: lateral ribs dilated into marginal wings. Albumen not adhering to the pericarp. Vittæ very numerous, entirely surrounding the seed.—Perennial herbs. Leaves usually with large inflated petioles, 3-parted, with the divisions pinnately or bipinnately divided; the segments ovate, toothed or serrate. Involucre almost none. Involucels many-leaved. Flowers white or greenish.

1. *A. officinalis* (Hoffm.): stem glabrous, terete, striate; leaves bipinnately divided; segments subcordate, lobed, acutely serrate, the terminal one 3-lobed; sheaths loose and saccate; involucel as long as the umbellets. *DC.*—*Hoffm. l. c.; DC. prodr.* 4. *p.* 169; *Hook. fl. Bor.-Am.* 1. *p.* 267. Angelica Archangelica, *Linn.! spec.* 1. *p.* 160; *Engl. bot. t.* 2561; *Cham. & Schlecht. in Linnæa*, 1. *p.* 394.
Greenland! and Labrador; also Unalaschka and Bay of Eschscholtz, *Chamisso.*—The plant is not uncommon in gardens.

2. *A. Gmelini* (DC.): stem glabrous, terete, striate; leaves ternately divided; segments 3-parted; the lobes ovate, serrate, cuneate at the base; sheaths moderately large; involucels as long as the flowering umbellets. *DC. prodr.* 4. *p.* 170; *Hook. fl. Bor.-Am.* 1. *p.* 267. Angelica Gmeleni, *Wormskiold*, ex *Fisch.* (Apium ternatum, *Pall. in Spreng. syst.* 1. *p.* 890?) Pleurospermum Gmeleni, *Bongard, veg. Sitcha, in mem. acad. St. Petersb.* (*ser.* 6) 2. *p.* 141.
Kotzebue's Sound, *Fischer*, ex *DC.* Sitcha, *Bongard.*

3. *A. atropurpurea* (Hoffm.): stem sulcate-striate (dark purple); divisions of the leaves bipinnately divided; segments of the secondary divisions 5–7, the three terminal ones confluent and decurrent at the base, somewhat acuminate, unequally serrate, membranaceous; petioles very large and inflated; peduncles nearly glabrous; fruit glabrous.—*Hoffm. umb.* 1. *p.* 169. Angelica atropurpurea, *Linn.! spec.* 1. *p.* 251; *Pursh, fl.* 1. *p.* 193; *Schult. syst.* 6. *p.* 603; *Torr.! fl.* 1. *p.* 316; *DC.! prodr.* 4. *p.* 168; *Hook. fl. Bor.-Am.* 1. *p.* 267; *Darlingt. fl. Cest. p.* 193. A. triquinata, *Michx.! fl.* 1. *p.* 167; *Bigel.! fl. Bost. ed.* 2. *p.* 110. Imperatoria lucida, *Nutt. gen.* 1. *p.* 181.

Moist low grounds, Canada! to Pennsylvania! west to Ohio! and Western Missouri, *Dr. Englemann.* May–June.—Stem 4–6 feet high, 1–2½ inches in diameter at the base, fistulous, glaucous. Leaflets 2 or 3 inches long and 1–2 inches wide, paler and somewhat glaucous beneath; the terminal one united with the upper pair, or deeply 3-parted, sessile or abruptly and slightly petiolulate. Petioles 1–2 inches in diameter. Umbels somewhat globose after flowering, 6–8 inches or more in diameter; the rays and peduncle minutely pubescent. Involucre wanting. Involucels of 8–12 short subulate leaflets. Petals greenish-white, oval, with a subulate reflexed or incurved point. Fruit nearly 3 lines long, frequently tricarpellary; the dorsal ribs prominent but not winged. Vittæ about 24; 8 of which belong to the commissure.—*Common Angelica.*

4. *A. hirsuta:* stem striate, the summit, with the peduncle and rays of the umbel, tomentose-pubescent; leaves bipinnately divided; the divisions usually quinate; segments ovate-oblong, acute, or somewhat obtuse, equally serrate, rather thick; the upper pair connate, but not decurrent at the base; lower petioles elongated, dilated at the base; umbels spreading; fruit pubescent.—Angelica hirsuta, *Muhl.! cat. ed.* 2. *p.* 30. A. triquinata, *Nutt. gen.* 1. *p.* 186; *Schult. syst.* 6. *p.* 604; *Ell. sk.* 1. *p.* 352; *Torr.! fl.* 1. *p.* 315; *DC.! prodr.* 4. *p.* 168; *Hook. fl. Bor.-Am.* 1. *p.* 267; *Darlingt. fl. Cest. p.* 193. "Pastinica triquinata, *Spreng. Umb. spec. p.* 68, *t.* 6, *f.* 2." Ferula villosa, *Walt. Car. p.* 115; *Pursh, fl.* 1. *p.* 192, excl. syn. Angelica sylvestris alta, &c., *Gronov.! Virg. ed.* 1.

Dry woods and thickets, New York! to South Carolina, not found west of the Alleghany Mountains? July–Aug.—Stem 2–5 feet high, simple, straight, ¼–½ inch in diameter at the base. Leaves distant: lower ones on slender petioles 6–10 inches long; the uppermost biternately divided, with shorter petioles, which are dilated the greater part of their length: segments usually about 1½ inch long, slightly and evenly but somewhat doubly serrate; the lower exterior one often 1–2-lobed at the base, so as to appear auriculate. Umbels on long peduncles, which are clothed with a dense white pubescence; rays about 2 inches long. Involucels about as long as the umbellets, 6–10-leaved, often unilateral. Petals ovate, with an incurved point. Fruit with 3 acute dorsal ribs. Vittæ usually 20; 8 of which belong to the commissure.—This plant has much the appearance of the European Angelica sylvestris.

5. *A. peregrina* (Nutt.! mss.): stem striate, pubescent at the summit; leaves ternately divided, the divisions quinate; segments ovate, acute, incisely serrate and somewhat lobed; sheaths moderately dilated; umbel loose, with many slender rays; involucre none; involucels 9–14-leaved, about as long as the umbellets; fruit with the lateral ribs very thick and scarcely winged.

Grassy plains of Wappatoo Island, Oregon, *Nuttall!* Sea Coast of Massachusetts, *Dr. Pickering!* (fruit and flowers only.) "Differs from A. atropurpurea in its long many-leaved involucels, much larger flowers, and in the fruit, the dorsal ribs of which are much more prominent and the marginal ones thick and obtuse, instead of thin and winged." *Nutt.*—Our Oregon specimen, received from Mr. Nuttall, resembles A. atropurpurea in its thin leaves with acute deeply serrated lobes, but differs in the characters pointed out by Nuttall, and also in the more slender stem and smaller petioles. We have not compared complete specimens from Maine and Oregon; but the fruit from the former locality seems to be quite different from that of A. atropurpurea.

6. *A. dentata* (Chapman! mss.): stem slender, glabrous, finely striate; petioles long and slender; lower leaves ternately divided; the divisions ter-

nate and quinate; segments ovate-lanceolate, coarsely and sparsely toothed, prominently veined on both surfaces, cuneate and somewhat confluent at the base; the upper leaves with narrower segments, and pinnatifid-toothed; umbel few- (8–10-) rayed; involucre none, or of 1–2 minute leaflets; involucel 4–6-leaved, about as long as the umbellets; fruit broadly oval; dorsal ridges carinated; the lateral ones broadly winged.

Sandy pine barrens, Gadsden County, Middle Florida, *Dr. Chapman! Dr. Alexander!* July–Sept.—Stem 2–3 feet high, scarcely as thick as a crowquill at the base. Radical leaves on petioles 6–8 inches long; the segments nearly an inch long, with 3–4 strong acute teeth on each side; the upper leaves ternately divided, with small deeply toothed segments: petioles slightly dilated at the base. Rays of the umbel 1–1½ inch long. Petals broadly ovate, with a short incurved point. Styles half as long as the ovary, recurved. Fruit 2½ lines long; the wings thin and nearly as broad as the seed. Vittæ about 20 (8 on the commissure).—A very distinct species.

25. CYMOPTERUS. *Raf. in jour. phys.* 1819; *DC. prodr.* 4. *p.* 203; *Nutt. in jour. acad. Philad.* 7. *p.* 28.

Margin of the calyx 5-toothed. Petals ovate or oblong, the point inflexed. Fruit elliptical or oval. Carpels much compressed dorsally: the dorsal ribs winged and undulate; the alternate ones often obsolete or only slightly elevated. Intervals with 2–4 vittæ. Commissure with 4–8 vittæ. Carpophore free or adnate.—Perennial glabrous herbs (natives of the Rocky Mountains and the adjacent country), usually low, with short stems or root-stocks. Leaves decompound; the segments narrow. Involucre usually none. Involucels many-parted, often unilateral. Flowers white or yellow.

§ 1. *Calyx-teeth subulate: pericarp thin: commissure with about* 8 *vittæ: carpophore none.*—EUCYMOPTERUS.

1. *C. glomeratus* (DC.): caudex somewhat elevated, bearing the leaves and peduncles at the summit; segments of the leaves oblong-linear; involucels palmately 5–7-parted.—*DC. prodr.* 4. *p.* 204. Selinum acaule, *Pursh, fl.* 2. *p.* 732. Thapsia glomerata, *Nutt.! gen.* 1. *p.* 184. Ferula Palmella, *Hook.! fl. Bor.-Am.* 1. *p.* 268.

Plains of the Missouri (*Bradbury!*) and Arkansas; and on the Rocky Mountains towards the sources of the Platte, *Nuttall!* Saskatchawan, *Drummond!* April–May.—Root thick and fusiform. Plant 3–8 inches high: caudex about an inch high, sometimes divided. Leaves on long petioles, ternately divided, and bipinnatifid. Rays of the umbel 4–6, scarcely a quarter of an inch long. Flowers white; those of the centre abortive, pedicellate; the fertile ones nearly sessile. Involucellate leaflets cohering at the base, and partly adnate to the rays of the umbellets. "Petals roundish-oval." *Nutt.* Fruit elliptical, nearly one-third of an inch long when mature: wings thickened and somewhat spongy; the intermediate ones of one carpel, and the central one of the other obsolete. Vittæ 3–4 in each interval, and 8 or sometimes more in the commissure, frequently anastomosing.

§ 2. *Calyx-teeth minute: pericarp somewhat corky: commissure with* 4 *vittæ: carpophore none.*—PHELLOPTERUS, Nutt. mss.

2. *C. montanus* (Nutt.! mss. under Phellopterus): "somewhat glaucous; leaves bipinnately divided; segments oblong-linear, rather obtuse; involucels 7–9-parted, membranaceous; the segments oblong, obtuse."

High bare plains of the Platte, towards the Rocky Mountains, *Nuttall!*—Plant 2–3 inches high; the caudex about an inch long. Leaf with an ovate outline; the segments rather few and distant. Peduncles shorter than the leaves. Flowers white, nearly sessile in the umbellets, many of them abortive. Involucels nearly as long as the umbellets. Fruit 3½ lines long; the integuments thick and opaque, so as to conceal the vittæ: wings rather thin; the alternal dorsal ones often defective, as in the preceding species: intervals with 2–3 vittæ.

3. *C. glaucus* (Nutt.): "glaucous; sheaths at the base of the caudex wide and inflated; leaves bipinnately divided; the segments crowded, ovate, toothed; involucels about 3-parted, the segments linear-subulate.—*Nutt.! in jour. acad. Philad.* 7. *p.* 28. Phellopterus glaucus, *Nutt.! mss.*

Borders of Flat Head River, towards the sources of the Oregon. *Mr. Wyeth!* April.—Plant 3–4 inches high. "Root large, descending." Caudex 1–2½ inches high, usually clothed with large sheathing stipules without leaves; the summit bearing the leaves and flowers. Leaves with a somewhat cordate outline, about twice the length of the peduncles. Flowers yellowish when dry (probably white in the living state). Fruit not seen.

§ 3. *Calyx-teeth minute: involucels minute: wings of the fruit somewhat thickened and spongy, the alternate ones obsolete: commissure with* 6 *vittæ: carpophore free,* 2-*parted.*—LEPTOCNEMIA, Nutt. mss.

4. *C. campestris* (Nutt.! mss. under Leptocnemia): leaves 3-parted; the divisions remote, bipinnatifid; segments oblong.

Plains of the Platte, near the Rocky Mountains. *Nuttall.*—"Root tuberous. Plant about 2 inches high. Caudex one-third of an inch high. Umbel 3–4-rayed. Peduncle scarcely as long as the leaves."—Scarcely differs from some of the smallest specimens of C. glomeratus, except by the broader segments of the leaves, and the free carpophore.

§ 4. *Calyx-teeth distinct, lanceolate: wings of the carpels broad: commissure with* 4–10 *vittæ: carpophore free,* 2-*parted.*—PTERYXIA, Nutt. mss.

5. *C. terebinthinus:* leaves pinnately decompound, rigid, glaucous; the segments short, deeply and acutely lobed and toothed; peduncles elongated; carpels with 5 perfect wings; vittæ of the commissure 8–10, of the intervals 4.—Selinum terebinthinum, *Hook. fl. Bor.-Am.* 1. *p.* 266, *t.* 95. Pteryxia terebinthacea, *Nutt.! mss.*

Sandy grounds on the Wallawallah River, Oregon, *Douglas.* Rocky places towards the Blue Mountains, *Nuttall!*—"Root fusiform, thick, exuding a copious turpentine." *Dougl.* Caudex short, firm, scarcely branched. Leaves 6–8 inches long. Peduncles (in fruit) nearly a foot long. Rays of the umbel about 10, unequal; the longest nearly 2 inches in length. "Teeth of the calyx somewhat foliaceous, deciduous." *Hook.* Fruit oval, about one-third of an inch long: wings thin; the dorsal about half as broad as the marginal ones. Flowers not seen.

6. *C. fœniculaceus* (Nutt.! mss. under Pteryxia): "leaves pinnately decompound; the segments short and linear, acute; carpels with 5 perfect wings; vittæ of the commissure 4–6."

On rocks, Blue Mountains of Oregon, *Nuttall!*—"Less than a foot high.

Leaves with narrow sheaths, on rather long petioles. Umbel small, of 8–10 rays. Petals lanceolate, with a long incurved point: Involucels very short. Flowers yellow. Wings of the carpels thin, scarcely undulated; the intervals with 3–4 vittæ.—Scarcely distinct from the preceding species.

7. *C. albiflorus* (Nutt.! mss. under Pteryxia): "somewhat glaucous; stem low, branching at the base; leaves pinnately decompound; the ultimate segments divaricate and often 3-cleft, short, acute; involucels about 7-parted, nearly as long as the flowering umbels; carpels with 5 undulate wings; vittæ of the commissure 6."

"Hills of Bear River, in the Rocky Mountain range.—Allied to the preceding; but the segments of the leaves are much wider and divaricate; the flowers are also white, and the involucels conspicuous. Petals lanceolate with an acuminate point. Styles long and filiform. Fruit roundish-oval; the wings undulate, thickish and corky, so as almost to conceal the intervals." *Nuttall.*

8. *C. thapsoides* (Nutt. mss. under Pteryxia): glaucous; leaves pinnately decompound, the divisions confluent; segments short, linear, obtuse, not wider than the rachis; involucels 5–7-parted, the lobes lanceolate; fruit oblong-oval, with narrow dorsal wings; vittæ of the commissure 8.

"Rocky places in the Blue Mountains of Oregon.—Allied to C. fœniculaceus, but with very different fruit. About a span high; the root tuberous and tap-shaped. Petals lanceolate, with an inflexed point. Wings of the fruit yellowish. Vittæ of the lateral intervals 4, of the dorsal ones 3. The plant exudes an aromatic resin." *Nuttall.*—We have received no specimens of this species, which is perhaps too near C. terebinthinus.

TRIBE VI. PEUCEDANEÆ. *DC.*

Fruit more or less compressed dorsally, surrounded with a single dilated entire smooth margin, which is flattened or slightly convex, but not thickened at the edge. Carpels with 5 filiform or rarely winged ribs, of which the lateral ones are contiguous to the dilated margin or united with it. Seed flattened, or convex on the back.

26. PEUCEDANUM. *Koch, Umb. f.* 28 & 29; *DC. prodr.* 4. *p.* 176.

Margin of the calyx minutely 5-toothed. Petals obovate, emarginate or entire, the point inflexed. Fruit flatly or lenticularly compressed on the back, with a flat dilated or winged border. Carpels with 5 equidistant ribs; the 3 dorsal ones filiform; the lateral ones indistinct, contiguous to the margin, or dilated into the wings. Intervals usually with single vittæ; the lateral ones sometimes with 2 or 3 vittæ. Commissure with 2–4- (rarely 6-) vittæ. Carpophore 2-parted. Seed flat or slightly concave on the face.—Herbaceous mostly perennial and glabrous plants. Leaves ternately or pinnately divided or decompound. Involucre various. Involucels many-leaved. Flowers white, yellow, or yellowish-green.

* *Involucre and involucels none: flowers yellow: calyx-teeth obsolete: leaves ternately or 2–3-ternately divided.*

1. *P. latifolium* (Nutt.! mss.): stemless and dwarfish; leaves ternately or biternately divided; segments broadly ovate, obtuse, toothed at the apex,

the lateral ones slightly petiolulate; rays of the umbel elongated, rather slender; peduncle short and very thick; fruit elliptical-oblong, with a very narrow winged border; dorsal ribs slightly prominent; intervals with 2–3 minute vittæ; commissure with 6 distant vittæ.

Plains east of Wallawallah River, Oregon, *Nuttall!*—Leaves with rather long narrow sheathing petioles: segments about an inch and a half long and an inch broad; the terminal one cuneate at the base and almost retuse; the summit with 3–8 broad mucronate teeth. Peduncles 4–5 lines in diameter, somewhat thickened at the summit. Rays of the umbel 2–5 inches long. Fruit about 3½ lines long, rather acute: vittæ scarcely visible through the cuticle.

2. *P. leiocarpum* (Nutt.! mss.): nearly stemless, somewhat glaucous; leaves triternately divided; segments petiolulate, oblong, entire or toothed at the apex; rays of the umbel slender and elongated, unequal; fruit shorter than the pedicel, narrowly elliptical, with a narrow winged border; dorsal ribs slightly prominent; intervals with single vittæ; commissure with 4 (rarely 6) closely approximated vittæ.—Seseli leiocarpum, *Hook.! fl. Bor.-Am.* 1. *p.* 262, *t.* 93.

β. campestre (Nutt. mss.): segments of the leaves linear-oblong; fruit longer than the pedicel.

Plains of the Oregon near Fort Vancouver &c. *Douglas*, *Dr. Scouler! Nuttall!* On Lewis River, *Mr. Tolmie!* June–July.—"Root long and fusiform," *Nutt.* Leaves with long narrow sheaths; the segments about an inch long, narrower in the sterile than in the fertile plant, often 2–3-toothed towards the apex. Peduncle about a foot in length, stout; in the fructiferous plant tumid at the summit. Rays of the umbel 1–5 inches long. Fruit half an inch long; the border much narrower than the dorsal disk. Vittæ of a light brown color; sometimes 2 in the lateral intervals, one of them much smaller than the other.

3. *P. ambiguum* (Nutt. mss.): caulescent and somewhat branching, glabrous; leaves triternately divided; segments linear-lanceolate, entire, obtuse; sheaths large and ventricose.—Eulophus ambiguus, *Nutt.! in jour. acad. Philad.* 7. *p.* 27.

Borders of Flat-Head River, Oregon, *Mr. Wyeth.* April.—About a span high (when in flower). "Root consisting of small round edible tubers," *Nutt.* Middle division of the leaf sometimes pinnately 5–7-parted. Umbels lateral and terminal. Flowers polygamous. Fruit unknown.

* * *Involucre none: involucels of numerous setaceous leaflets: calyx-teeth obsolete: flowers yellow: leaves* 1–3-*ternately divided; the segments narrow, elongated and entire.*

4. *P. triternatum* (Nutt.! mss.): peduncle, petioles, and margin of the leaves minutely pubescent; leaves sometimes simply but usually 2–3-ternately divided; the segments lanceolate-linear, or narrowly linear, attenuated at each end; sheaths somewhat inflated; fruit twice as long as the pedicels, narrowly elliptical; the winged margin half the breadth of the disk; intervals with single vittæ; commissure with 2-vittæ.—Seseli biternatum, *Pursh. fl.* 1. *p.* 197; *DC. prodr.* 4. *p.* 196; *Hook.! fl. Bor.-Am.* 1. *p.* 204, *t.* 94; *Hook. & Arn. bot. Beechey, suppl. p.* 348. Eulophus triternatus, *Nutt.! in jour. acad. Philad.* 7. *p.* 27.

β. leptocarpum: glabrous; fruit lanceolate-elliptical, narrowly winged; pedicels very short.—P. leptocarpum, *Nutt.! mss.*

Plains of the Rocky Mountains! and throughout Oregon to the Pacific! *β.* plains of the Oregon near the confluence of the Wahlamet, *Nuttall!* July.

—Root tuberous, large and somewhat fusiform. Stem of the fertile plant 1–2 feet high; of the sterile one very short. Segments of the leaves 1–3 inches long, petiolulate, 1–3 lines wide. Peduncles usually a foot or more in length. Rays of the umbel 8–12. Flowers polygamous, or diœcious. Fruit about 5 lines long, somewhat attenuated upward in β.; the ribs prominent and pale: vittæ dark brown.—The roots of this and the preceding species, after having been fermented by heat, are used as food by the aborigines.

5. *P. lævigatum* (Nutt. mss.): "glabrous; stem low and slender, mostly simple; leaves biternately divided; segments linear and rather long, obtuse; sheaths small; involucre and involucel? none; fruit oblong-elliptical; intervals with single vittæ; commissure with 2 vittæ.

"Blue Mountains of Oregon.—Petioles about 4 inches long. Segments of the leaves all ternately divided, narrowed towards the base. Rays of the umbel 12–14. Fruit about as long as the pedicels, the border rather wide. Flowers not seen." *Nuttall.*—We have not seen this species.

* * * *Involucre none: involucel unilateral, palmately cleft: flowers white: leaves tripinnately divided.*

6. *P. nudicaule* (Nutt. mss.): nearly stemless; glabrous and somewhat glaucous; rachis of the leaves narrowly winged; segments oblong, pinnatifid; the lobes lanceolate and acute; involucel 7–9-parted, membranaceous: fruit ovate; the winged margin about half as wide as the disk; intervals with single vittæ; commissure with 4 vittæ.—Smyrnium nudicaule, *Pursh, fl.* 1. *p.* 196. Ferula nudicaulis, *Nutt.! gen.* 1. *p.* 182, not of *Spreng.* F. Nuttallii, *DC. prodr.* 4. *p.* 174; *Hook. fl. Bor.-Am.* 1. *p.* 268.

High plains, on the upper part of the Missouri, Arkansas, and the Rocky Mountains, *Bradbury, Nuttall!* On the Oregon, *Lewis, Douglas.*

* * * * *Involucre none: involucels unilateral, palmately cleft, or of 6–9 oblong or obovate leaflets: flowers yellow: calyx-teeth minute: leaves ternately and pinnately decompound.*

7. *P. fœniculaceum* (Nutt.! mss.): nearly stemless and minutely pubescent; ultimate segments of the leaves narrowly linear, short; involucel 5–7-cleft; fruit broadly ovate; the winged border about half the breadth of the disk; ribs prominent; vittæ 1–2 (rarely 3) in the intervals, 2–4 in the commissure.—Ferula fœniculacea, *Nutt.! gen.* 1. *p.* 183; *DC. prodr.* 4. *p.* 174. Pastinaca fœniculacea, *Spreng. in Schult. syst.* 6. *p.* 587.

β. daucifolium: rays of the flowering umbel and involucels hoary-tomentose.—P. daucifolium, *Nutt.! mss.* Ferula fœniculacea, *Hook.! fl. Bor.-Am.* 1. *p.* 268, partly, (sp. from Saskatchawan!)

γ. tomentose-pubescent, nearly stemless; segments of the leaves linear-oblong, much crowded; fruit (immature) and involucels pubescent.

Upper part of the Missouri and Arkansas, *Nuttall!* Sandstone hills on the prairies of Grand River, *Dr. James! β.* on the Platte, *Nuttall!* Saskatchawan, *Drummond!* April–May.—Root fusiform. Petioles large and sheathing at the base. Leaves finely dissected; the ultimate segments 1–3 lines long and almost capillary. Peduncle 8–12 inches long. Principal rays of the umbel 1–2½ inches long; several short abortive ones. Involucel nearly as long as the flowering umbel, at first densely tomentose, but at length somewhat glabrous; the lobes oblong-lanceolate, acute. Flowers polygamous. Calyx distinctly 5-toothed. Petals oval; the point cuspidate. Fruit about 2 lines in length: dorsal intervals with seldom more than 2 vittæ; the lateral ones with 2 or 3.

8. *P. macrocarpum* (Nutt.! mss.): minutely pubescent; stem short; ul-

timate segments of the leaves narrowly linear, short; involucel 7–9-cleft; fruit narrowly elliptical (twice as long as broad); the winged margin as wide as the disk; ribs nearly obsolete; intervals with single vittæ; commissure with 4 vittæ.—Ferula fœniculacea, *Hook. l. c.* partly (the Oregon plant). Ferula macrocarpa, *Hook. & Arn. bot. Beechey, suppl. p.* 348?

Barren hills on the Oregon, *Nuttall! Dr. Scouler! Douglas.* California, *Douglas.*—Stem 1–3 inches, and the peduncle 8–12 inches long. "Flowers white," *Nutt.* Fruit nearly three-fourths of an inch in length, with a thin pale border.—Differs from P. fœniculaceum chiefly in the fruit, which is much larger and proportionally narrower, and the wings nearly twice as broad. We have described this plant from specimens collected by Mr. Nuttall. It may not be identical with Ferula macrocarpa, *Hook. & Arn.*

9. *P. dasycarpum:* nearly stemless, pubescent; leaves ternately decompound; the ultimate segments oblong-linear, short, rather obtuse; involucre of 1–2 lanceolate leaflets; involucels deeply 4–6-parted; the segments obovate-oblong; fruit nearly orbicular, tomentose-pubescent, about the length of the pedicel; vittæ single in the dorsal intervals, 2 in the lateral ones; commissure with 4 vittæ.

California, *Douglas!*—Leaves 2–3 inches long; the lamina about the length of the petiole, the ultimate segments 1–2 lines long, rather crowded. Peduncle of the fructiferous umbel 6–8 inches long, stout. Rays 4–5 principal, and several shorter abortive ones. Involucel (colored?) strongly veined. Fruit one-third of an inch in diameter, when young broadly ovate, but in the mature state nearly as broad as long: the vittæ not perceptible externally. A very distinct species, which is not described in Hooker & Arnott's account of Douglas's Californian collection. Our specimens were received from the London Horticultural Society, through the kindness of Mr. Bentham.

10. *P. parvifolium:* somewhat caulescent, glabrous; lamina of the radical leaves as long as the petiole, the circumscription deltoid, tripinnatifid; the segments ovate, acuminate, incised, spreading; involucels of about 8 lanceolate-subulate leaflets; fruit elliptical-obovate, the wing as broad as the disk; ribs slightly prominent; intervals with single vittæ; commissure with 4 vittæ.—Ferula parvifolia, *Hook. & Arn.! bot. Beechey, suppl. p.* 348.

California, *Douglas!*—Plant about a foot high when in fruit. Stems very short, several from a single root. Lamina of the leaf about 1½ inch long: segments incised, with short acute lobes. Flowers bright yellow. Fruit one-third of an inch long; the ribs nearly obsolete.

11. *P. caruifolium:* minutely pubescent, stemless or nearly so; leaves ternately decompound, with long narrowly linear acute segments; petioles very short, with a large very broad inflated base; involucel 9–12-leaved; the leaflets distinct, broadly obovate, petiolulate; fruit broadly elliptical, with scarcely prominent ribs; the wing about half the breadth of the disk; vittæ very indistinct, apparently 1–2 in the dorsal intervals and 2–3 in the lateral ones.—Ferula caruifolia, *Hook. & Arn.! bot. Beechey, suppl. p.* 348. Peucedanum Californicum, *Nutt.! mss.*

California (plains of St. Barbara, *Nuttall!*), *Douglas!*—About a span high. Ultimate segments of the leaves nearly half an inch in length and half a line wide. Flowers bright yellow. Fruit one-third of an inch long. Vittæ minute and empty in Douglas's specimens, so that the fruit is nearly tasteless.

12. *P. utriculatum* (Nutt.! mss.): glabrous, branching from the base; leaves ternately decompound; ultimate segments narrowly linear, loose; involucels about 7-leaved; the leaflets distinct nearly to the base, broadly-obovate, petiolulate, nearly as long as the umbellet; fruit obovate-elliptical, with a broad winged margin; intervals with single vittæ; commissure with 4–6 vittæ.

Rocky plains, particularly near the confluence of the Wahlamet and Oregon Rivers, *Nuttall! Mr. Tolmie!*—Root tuberous. Stem from a few inches to a foot or more in length, decumbent. Petiole ternately divided down to the dilated base. Peduncles terminal and opposite the leaves. Umbel of from 12 to 20 very unequal rays. Leaflets of the involucel often toothed at the summit. Flowers bright yellow. Petals obcordate, with an inflexed point. Fruit about one-fourth of an inch long, about the length of the pedicel: dorsal ribs prominent. Intervals filled with broad thin vittæ.—The root is used as food by the aborigines. *Nuttall.*

P. Ludovicianum, Raf. fl. Ludov.

27. EURYPTERA. *Nutt. mss.*

Margin of the calyx 5-toothed; the teeth lanceolate, deciduous. Petals cuneate-oblong; the point cuspidate and inflexed. Fruit reniform-orbicular, emarginate at each end, flat; the margin very broad and thin; the disk impressed. Carpels with 5 obtuse slightly prominent approximated equidistant ribs. Intervals with single large vittæ. Commissure with 2 vittæ. Seed flat, somewhat concave on the back.—A perennial glabrous herb. Leaves ternately divided; the segments broadly cordate, somewhat lobed, coarsely and mucronately toothed. Involucre none. Involucels unilateral, many-parted. "Flowers yellowish."

E. lucida (Nutt.! mss.)

Woods of St. Diego, California, *Nuttall!* April.—Root tuberous. Leaves all radical or nearly so, simply ternately divided: segments an inch or more in diameter, somewhat coriaceous; the teeth widely spreading: petioles with a large ovate sheathing base. Fructiferous peduncle very stout, 8–10 inches long. Rays of the umbel 10–14. Involucel 6–7-parted; the segments lanceolate. Fruit about 5 lines wide, the breadth exceeding the length, glabrous and somewhat shining.

28. IMPERATORIA. *Linn.; DC. prodr.* 4. *p.* 183.

Flowers and fruit the same as in Peucedanum; but the margin of the calyx obsolete.—Perennial glabrous herbs. Stem terete, striate. Leaves 2–3-ternately divided; the segments ovate or oblong, serrate. Umbels larger, compound. Involucre none. Involucel few-leaved. Flowers white. *DC.*

1. *I. Ostruthium* (Linn.): leaves ternately divided; segments broadly ovate, 3-lobed, incisely serrate; the lateral ones unequal at the base; sheaths large. *DC.*—*Linn. spec.* 1. *p.* 259; *Lam. ill. t.* 199, *f.* 1.; *Engl. bot. t.* 1380; *DC. prodr.* 4. *p.* 183; *Hook. fl. Bor.-Am.* 1. *p.* 269. Peucedanum Ostruthium, *Koch, Umb. p.* 95; *Hook. Brit. fl. p.* 118.
Newfoundland, *Pylaie*, ex *DC.*—*Master-Wort.*

29. LEPTOTÆNIA. *Nutt. mss.*

Calyx-teeth nearly obsolete. Petals obovate or oblong, with an acuminate inflexed point. Styles slender, diverging. Stylopodium inconspicuous.

Fruit oblong-elliptical, flat, with a thickish corky winged margin: ribs very slender, filiform; the lateral ones united with the winged margin. Intervals broad, without true vittæ, but marked with 6–8 vittæ-like lines. Commissure without vittæ. Seed flat. Carpophore 2-parted.—Perennial (North West American) glabrous herbs (1–3 feet high), with tuberous roots, and biternately much divided leaves. Involucre none. Involucels unilateral, many-parted, with narrow segments. Flowers brown or yellow.

1. *L. dissecta* (Nutt.! mss.): "umbels radical and terminal; flowers dark brown; segments of the leaves ovate, incisely pinnatifid; the lobes lanceolate, entire or 2–3-toothed; fruit many times longer than the pedicels.
"Plains of the Oregon near the confluence of the Wahlamet.—Root large. Stem about 3 feet high, glaucous, terete. Secondary divisions of the leaves bipinnatifid. Peduncle very long. Involucels shorter than the many-flowered umbellets; the segments subulate. Rays of the umbel 12–24, slender, 2–4 inches in length. Fruit three-fourths of an inch long, nearly tasteless, owing to the absence of vittæ." *Nuttall.*

2. *L. multifida* (Nutt. mss.): "stem low; umbel terminal; flowers yellow; segments of the leaves pinnately parted; the lobes linear; fruit a little shorter than the pedicels.
"Plains of the Oregon, east of Wallawallah, and in the Blue Mountains.—Root a roundish white tuber, almost like a turnip. Plant 1–2 feet high, somewhat spreading. Fruit very similar to that of the preceding species." *Nuttall.*

3. *L.? Californica* (Nutt. mss.): "nearly stemless: leaves biternately divided; segments pinnatifid, obtuse, acutely and incisely serrate, the terminal one 3-lobed; petals (yellow) lanceolate, with a long inflexed point.
"St. Barbara, Upper California.—Leaves on long petioles, with very few rather small divisions. Rays of the umbel 10–12. Calyx minutely 5-toothed. Fruit not seen.—Perhaps a species of Polytænia; the leaves being similar, but thinner. It differs from the two preceding species in the summit of the petals being long and subulate, instead of short and broad." *Nuttall.*

30. TIEDMANNIA. *DC. mem. Umb. p.* 51, *t.* 12, *& prodr.* 4. *p.* 187.

Margin of the calyx 5-toothed. Petals broadly ovate, with a narrow inflexed point. Fruit much compressed dorsally, obovate. Carpels with 5 filiform somewhat carinate approximated equal ribs; the lateral ones dilated into a membranaceous margin nearly as broad as the dorsal disk. Intervals with single large vittæ. Commissure with 2 vittæ. Carpophore 2-parted. Seed flat.—A glabrous biennial? herb, with a fistulous stem; and leaves reduced to terete nodose petioles. Involucre and involucels of 5–6 subulate leaves. Flowers white.

The insertion of the anthers in this plant does not differ from that of other Umbelliferæ.

T. teretifolia (DC.! l. c.)—Œnanthe filiformis, *Walt. Car. p.* 113, not of *Lam.* Œ. Carolinensis, *Pers. syn.* 1. *p.* 318; *Pursh, fl.* 1. *p.* 194. Œ. teretifolia, *Muhl.! cat. ed.* 2. *p.* 31. Sium teretifolium, *Ell. sk.* 1. *p.* 354.
Ponds and swamps, Harper's Ferry, Virginia, (*Dr. Aikin!*) to Florida!

and west to Louisiana. Aug.-Sept.—Stem 2–6 feet high, erect, fistulous, branching above. Leaves, or rather petioles, 4–8 inches long and 2–4 lines in diameter, tapering to the summit, divided by numerous transverse membranous partitions. Principal umbel of 10–15 slender rays. Fruit about 3 lines long, "the vittæ filling the dorsal intervals." *DC.*

31. ARCHEMORA. *DC. mem. Umb. p.* 52, *& prodr.* 4. *p.* 188.

Margin of the calyx 5-toothed. Petals obcordate, with an inflexed point. Fruit lenticularly compressed, oval or obovate. Carpels with 5 filiform obtuse approximated equidistant ribs; the lateral ones dilated into a flattish margin nearly as broad as the disk. Intervals with single large vittæ. Commissure with 4–6 vittæ. Carpophore 2-parted. Seed flat.—Perennial glabrous herbs (natives of the United States), growing in swamps. Leaves pinnately or ternately divided; the segments entire or remotely toothed. Involucre none, or few-leaved. Involucels of numerous leaflets. Flowers white.

1. *A. rigida* (DC.): leaves pinnately divided.

α. segments of the leaves ovate, oblong, or lanceolate, remotely toothed or denticulate, often entire.—A. rigida, tricuspidata, & denticulata, *DC.! prodr.* 4. *p.* 188. A. rigida, *Darlingt. fl. Cest. p.* 195. Sium rigidius, *Linn.! spec.* 1. *p.* 251. S. rigidius, tricuspidatum & denticulatum, *Ell. sk.* 1. *p.* 354. Sison marginatum, *Michx.! fl.* 1. *p.* 168. Œnanthe rigida, *Nutt.! gen.* 1. *p.* 189. Pastinaca rigida, *Spreng. in Schult. syst.* 6. *p.* 586; *Torr.! fl.* 1. *p.* 314.

β. segments of the leaves linear, elongated, mostly entire.—A. ambigua, *DC.! l. c.* Sium longifolium, *Pursh, fl.* 1. *p.* 194. Œnanthe ambigua, *Nutt.! l. c.* Pastinaca ambigua, *Spreng. l. c.*; *Torr.! l. c.*

Swamps, Michigan! New York! to Florida! and to Louisiana! Sept. —Stem 2–5 feet high, erect, slender, terete. Leaves usually with 3–5 pairs of segments, sometimes with 2, or even a single pair, variable in form, occasionally obovate, but more commonly oblong-lanceolate, somewhat rigid, and the margin cartilaginous; in var. α. more or less toothed; the teeth often very large, and sometimes reduced to two near the summit, or small and scattered. Umbel of many slender rays. Fruit 3 lines long; the dorsal ribs slightly elevated and greenish; the lateral ones united with the rather thin white and somewhat corky margin. Vittæ dark purple, filling the intervals. Commissure white.

2. *A. ternata* (Nutt. mss.): "leaves ternately divided, with very long petioles; segments linear.—Peucedanum ternatum, *Nutt. gen.* 1. *p.* 182; *DC. prodr.* 4. *p.* 182.

"Margin of swamps in the pine forests of North and South Carolina; not uncommon near Newbern.—Stem 2–3 feet high, slender. Leaves few; the petiole of the lowermost nearly 2 feet long; segments petiolulate, or filiformly attenuated downwards, 4–6 or 8 inches long, and scarcely 3 lines wide. Rays of the umbel 6–9, elongated. Pedicels (fructiferous) more than an inch long. Mature fruit as large as that of a parsnep (Pastinaca sativa), surrounded with a thick winged somewhat fungous margin, which is continued internally over the whole commissure, and conceals the 4 vittæ. Wing of the carpels about half the breadth of the dorsal disk. Flowers not seen." *Nutt. l. c. & mss.*—It is singular that no specimen of this plant has yet reached us.

32. PASTINACA. *Tourn.; Linn.; DC. prodr.* 4. *p.* 188.

Calyx-teeth obsolete or minute. Petals somewhat orbicular, entire, involute; the point broad and retuse. Fruit much compressed, with a dilated flat margin. Carpels with 5 very slender ribs; 3 of them dorsal and equidistant; the lateral ones remote, contiguous to the margin. Intervals with single vittæ. Commissure with 2 or more vittæ. Carpophore 2-parted. Seed flat.—Perennial or biennial herbs, with fusiform often fleshy roots. Leaves pinnately divided; the segments toothed, incised, or lobed. Involucre and involucels few-leaved or none. Flowers yellow.—*Parsnep.*

1. *P. sativa* (Linn.): stem sulcate, glabrous; leaves minutely pubescent; segments ovate-oblong, obtuse, unequally toothed and serrate, incised at the base; the terminal one 3-lobed; fruit oval; the commissure with 2 vittæ.—*Linn. spec.* 1. *p.* 262; *Engl. bot. t.* 556; *Pursh, fl.* 1. *p.* 196; *DC. prodr.* 4. *p.* 188.

Fields and waste places. Introduced. July–Sept.—Plant yellowish-green. Root biennial, fleshy. Stem 2–5 feet high. Leaves somewhat shining; the segments sessile. Umbels large, fastigiate. Calyx-teeth obsolete. Fruit about one-third of an inch long, emarginate; the border somewhat thickened. Vittæ dark purple.—*Common Parsnep. Wild Parsnep.*

33. HERACLEUM. *Linn.; Lam. ill. t.* 200; *DC. prodr.* 4. *p.* 191.

Calyx-teeth distinct, or sometimes obsolete. Petals obcordate, with an inflexed point; in the exterior flowers often radiate and apparently deeply 2-cleft. Fruit much compressed on the back, with a broad flat margin: ribs slender; 3 of them dorsal and equidistant; the 2 lateral more remote, and contiguous to the dilated margin. Vittæ mostly clavate, shorter than the fruit; one in each interval, and usually 2 in the commissure. Seed flat. Stout herbs, with pinnately or ternately divided or lobed leaves: petiole large and sheathing. Umbels with numerous rays. Involucre caducous, mostly few-leaved. Involucels many-leaved.—*Cow-Parsnep. Master-Wort.*

1. *H. lanatum* (Michx.): stem sulcate, pubescent; leaves ternately divided, tomentose-pubescent beneath; the segments petiolulate, roundish-cordate, lobed; fruit oval or obovate.—*Michx.! fl.* 1. *p.* 166; *Pursh, fl.* 1. *p.* 181; *Bigel. fl. Bost. ed.* 2. *p.* 110; *Torr.! fl.* 1. *p.* 313; *DC.! prodr.* 4. *p.* 192; *Hook. fl. Bor.-Am.* 1. *p.* 270; *Bongard, veg. Sitcha, in mem. acad. St. Petersb.* (*ser.* 6) 2. *p.* 142; *Darlingt. fl. Cest. p.* 196.

β. vestitum: upper part of the stem and petioles densely woolly; leaves somewhat obtusely lobed and toothed.—H. vestitum, *Nutt.! mss.* H. Douglasii, *DC. l. c.; Hook. l. c.*

Wet meadows, Newfoundland! and Canada! as far north as lat. 58° (*Richardson*); to Pennsylvania and Kentucky. Oregon, *Dr. Scouler, Douglas.* Sitcha, *Bongard. β.* Wappatoo Island, Oregon, *Nuttall!*—♃ Stem 4–8 feet high, an inch or more in diameter at the base. Leaves very large: the principal divisions 4–10 inches in diameter, unequally lobed; the lobes acuminate, nearly glabrous on the upper surface. Umbels widely spreading, 6–10 inches or more in diameter. Involucre of 6–10 oblong-lanceolate caducous leaflets. Leaflets of the involucel lanceolate, attenuate into a long point. Flowers white; the petals of the exterior ones very unequal, appearing deeply and often unequally 2-cleft by the enlargement of the lobes on each side of the inflexed point. Fruit nearly half an inch long, often emarginate. Vittæ of the intervals clavate, extending only about half way down the carpels. Commissure usually with 2 vittæ, but sometimes with 1 or 2 imperfect ones.—H. Douglasii, *DC.* was founded on a specimen raised in the garden of the Horticultural Society of London, from seed collected in Oregon by the late Mr. Douglas. Hooker thinks it is only a variety of H. lanatum, but Mr. Nuttall considers it a distinct species.

34. EURYTÆNIA.

Margin of the calyx 5-toothed. (Petals unknown.) Stylopodium depressed. Styles slender, recurved. Fruit ovate, lenticularly compressed on the back, glabrous, with a narrow winged margin: dorsal ribs approximated, filiform; the middle one carinate or very narrowly winged; the lateral ones remote, thick and corky, united with the thin margin. Intervals filled with single vittæ. Commissure with 2 very broad contiguous vittæ. Carpophore 2-cleft.—A glabrous herb, with 2-3-pinnately dissected leaves; the segments distant, narrowly linear, acute. Umbels terminal; the rays numerous. Involucre and involucel of several 3–5-cleft leaflets. Flowers not seen.

E. Texana.

Texas, *Drummond!* (Coll. II. [or III.] no. 24.)—Plant apparently about 2 feet high. Stem slender, finely striate, branching above. Cauline leaves on short petioles; the segments long and slender, scarcely half a line wide. Umbel of 10–15-rays. Leaflets of the involucre and involucels cleft about half way down; the segments narrowly linear and diverging. Calyx-teeth lanceolate. Fruit nearly 2 lines long, broadly ovate: dorsal ribs distinct; the 2 exterior generally appearing double or furrowed longitudinally: lateral ribs much larger, obtuse, surrounding the fruit, but not extending to the edge of the wing. Commissure with the disk almost wholly occupied by the broad vittæ.

35. POLYTÆNIA. *DC. mem. Umb. p.* 53, *t.* 13, *& prodr.* 4. *p.* 196.

Margin of the calyx 5-toothed. Petals oblong, with a long inflexed emarginate point. Fruit oval, lenticularly compressed on the back, glabrous, with a broad and even tumid corky margin; the dorsal disk impressed: ribs obscure, nearly immersed in the corky pericarp. Intervals with 2 vittæ. Commissure with 4–6 vittæ; the thickened corky margin also filled with resiniferous tubes. Carpophore free, 2-cleft. Seed plano-convex.—A glabrous herb, with bipinnately divided leaves; the uppermost opposite and often 3-cleft. Umbels terminal and opposite the leaves. Involucre none. Involucel of several setaceous leaflets. Flowers bright yellow.

P. Nuttallii (DC. l. c.).—Ferula Drummondii, *Hook. & Arn. in compan. to bot. mag. p.* 47*?*

β. lævis: stem smooth or very nearly so.

Prairies and barrens of the Western States, Indiana! to Louisiana: west to the plains of the Platte! and Texas! *β*. Michigan, *Dr. Wright!* May.—Plant 2–3 feet high. Root somewhat fusiform. Stem rather stout, sulcate, usually scabrous, leafy. Leaves mostly on long petioles; the segments pinnately incised or toothed; those at the base of the peduncles often only 3-cleft, with entire or sparingly toothed lobes. Rays of the umbel 12–20, about an inch in length. Fruit nearly 3 lines long, entire at each end; the border tumid quite to the edge; whence the area of the disk appears very much depressed, especially in the dry state. Transverse section of the fruit oblong-elliptical, exhibiting the seed closely invested with numerous vittæ and inclosed in the corky pericarp; the vittæ and tubes of the border filled with a terebinthine oil or turpentine.

TRIBE VII. CUMINEÆ. *DC.*

Fruit contracted at the sides. Carpels with 5 primary filiform ribs, of which the lateral ones are marginal; and 4 more prominent secondary ones; all of them wingless. Seed straight, flattish on the face. Umbels compound.

36. TREPOCARPUS. *Nutt. in DC. mem. Umb. p.* 56, *t.* 14.

Calyx-teeth subulate, at length deciduous. Petals obcordate, with an inflexed point. Fruit linear-oblong, pyramidal at the summit, 8-angled: primary ribs indistinct: secondary ribs 4, elevated, obtuse, with a single vittæ beneath each. Commissure thick and spongy, grooved in the middle, with 2 minute approximated vittæ next the seed. Seed straight, convex on the back.—A glabrous annual. Leaves many-parted; the segments of the cauline one narrowly linear. Umbels opposite the leaves, of 3–5 rays. Umbellets few-flowered. Involucre aud involucels of few filiform leaflets. Flowers white.

T. Æthusæ (Nutt.! l. c.)—T. Æthusæ & brachycarpus, *DC. l. c., & prodr.* 4. *p.* 202.

Prairies of Arkansas, *Nuttall! Dr. Englemann!* Louisiana, *Dr. Hale! & Prof. Carpenter!* June.—Plant about 2 feet high, "with a very strong odor of Carrot," *Dr. Englemann.* Stem striate, slender, branching. Leaves very thin, tripinnately divided; the rachis very narrow and winged: lower ones with the segments broader, pinnatifid-toothed. Primordial leaves narrowly linear. Umbels on peduncles longer than the leaves. Fruit 4–5 lines long, thick and rigid; the primary ribs scarcely perceptible except in the dry state. Vittæ not visible externally.—T. brachycarpus, *DC.* only differs in shorter fruit, and in the fewer rays of the umbel; which are inconstant characters.

TRIBE VIII. THAPSIEÆ. *Koch; DC.*

Fruit either dorsally compressed or nearly terete. Carpels with 5 filiform often bristly primary ribs; of which the lateral ones are placed on the face of the commissure: secondary ribs 4; the dorsal ones filiform and the lateral ones winged; or all of them winged (hence the fruit is either 8-winged, or only 2-winged on each side).

Seed flattish, or somewhat teretely convex, plane on the face.—Umbels compound.

37. LASERPITIUM. *Tourn.; DC. prodr.* 4. *p.* 204.

Margin of the calyx 5-toothed. Petals obovate, emarginate, the point inflexed. Fruit dorsally compressed, or somewhat terete. Primary ribs of the carpels filiform: secondary ones all winged, with single vittæ beneath them. Carpophore free, 2-parted.—Perennial herbs. Leaves 2–3-pinnately divided; the segments entire, toothed, or incised. Involucre and involucels many-leaved. Flowers white, or rarely yellow.

1. *L. hirsutum* (Lam.): leaves supradecompound, hirsute; segments narrow, pinnatifid; the lobes short, linear, cuspidate; leaflets of the involucre membranaceous, mostly 3-cleft at the summit, ciliate; wings of the fruit slender, flat. *DC.—Lam. fl. Fr.* 3. *p.* 648; *DC. prodr.* 4. *p.* 205; *Hook. & Arn. bot. Beechey, p.* 125; *Hook. fl. Bor.-Am.* 1. *p.* 270.
Kotzebue's Sound, *Lay & Collie.*—An alpine plant in Europe.

TRIBE IX. DAUCINEÆ. *DC.*

Fruit lenticularly compressed on the back, or somewhat terete. Carpels with 5 filiform bristly primary ribs, of which the lateral are placed on the flat commissure; and 4 more prominent prickly secondary ones; the prickles distinct or united into a wing. Seed flattened or convex on the back, flattish on the face.—Umbels compound.

38. DAUCUS. *Tourn.; Linn.; DC. prodr.* 4. *p.* 209.

Margin of the calyx 5-toothed. Petals obovate, emarginate, with an inflexed point; the exterior ones often larger than the others and deeply 2-cleft. Fruit somewhat dorsally compressed, ovate or oblong. Carpels with 5 primary filiform bristly ribs, of which 3 are on the back and 2 on the flat commissure: secondary ribs 4, equal, more prominent, winged, divided into a single row of prickles. Intervals with single vittæ under the secondary ridges. Carpophore free, entire.—Mostly biennial herbs. Leaves 2–3-pinnately divided. Involucre of several trifid or pinnatifid leaflets. Leaflets of the involucel entire or 3-cleft. Flowers white or yellow; the central one often fleshy and sterile.

1. *D. Carota* (Linn.): stem hispid; leaves 2–3-pinnatifid; segments pinnatifid; the lobes lanceolate, cuspidate; leaflets of the involucre pinnatifid, nearly the length of the umbel; prickles about equal to the diameter of the oblong oval fruit. *DC.—Linn. spec.* 1. *p.* 242; *Engl. bot. t.* 1174; *Pursh, fl.* 1. *p.* 191; *Torr.! fl.* 1. *p.* 308; *DC. prodr.* 4. *p.* 211.
Fields, road-sides, &c.; naturalized throughout the United States. July–Sept.—Root fusiform. Stem 2–3 feet high, branching. Umbels concave. Flowers white, or sometimes ochroleucous, the solitary central one of each umbellet abortive and colored.—*Carrot. Wild Carrot.*

2. *D. pusillus* (Michx.): stem (especially the lower part) retrorsely muricate-hispid; leaves bipinnately divided; the segments pinnatifid, with narrow linear lobes; leaflets of the involucre bipinnatifid, nearly as long as the (small) umbel; prickles equalling the breadth of the ovate fruit, distinctly barbed at the summit.—*Michx.! fl.* 1. *p.* 164; *Pursh, fl.* 1. *p.* 192; *Ell. sk.* 1. *p.* 349; *DC. prodr.* 4. *p.* 213.

β. microphyllus: lower part of the stem and petioles villous with retrorse or spreading rather soft hairs.—D. microphyllus, "*Presl, in herb. Hænke;*" *DC. prodr.* 4. *p.* 213; *Hook. fl. Bor.-Am.* 1. *p.* 271.

γ. scaber: stem hirsute with short retrorse hairs, scabrous-aculeolate above.—D. scaber, *Nutt.! mss.*

Fields and prairies, South Carolina! to Louisiana and the Southern part of Arkansas. *β.* Plains of the Oregon, *Dr. Scouler! Douglas! Nuttall!* Nootka Sound, *Hænke*. *γ.* California, *Nuttall!* May.—① or ② Stem 1–2 feet high, scabrous (as are also the petioles and rachis) with sharp elevated papillæ at the base of the hairs. Rays of the umbel about an inch long. Flowers ochroleucous. Fruit about half as large as in D. Carota; the prickles confluent and a little dilated at the base, minutely scabrous. Vittæ large and filled with a pungent oil.

Series 2. *Seed with the margins involute, or deeply furrowed on the face.* (Subord. CAMPYLOSPERMÆ, *DC.*)

TRIBE X. CAUCALINEÆ. *Koch; DC.*

Fruit laterally contracted or somewhat terete. Carpels with 5 primary bristly or prickly ribs, of which the lateral ones are on the commissure: secondary ribs 4, more prominent and prickly, or sometimes obliterated by the copious prickles filling the entire intervals. Seed involute, or with the margin inflexed.—Umbels compound.

39. CAUCALIS. *Linn.; Hoffm. Umb. p.* 54. *t.* 1, *f.* 14; *DC. prodr. l. c.*

Calyx-teeth ovate-lanceolate. Petals obovate, emarginate, with an inflexed point; the exterior ones deeply 2-cleft and larger. Carpels with 5 primary filiform bristly or prickly ribs, and 4 more prominent secondary ones, divided into a single row of prickles. Intervals with single vittæ under the secondary ridges. Commissure with 2 vittæ. Carpophore rigid, 2-cleft at the summit. Seed involute or the margin inflexed.—Annual herbs with many-cleft leaves. Involucre none, or 1–2-leaved. Involucel of 3–8 lanceolate spreading leaflets. Flowers white; the central ones staminate, sterile. *DC.*

§. *Petals oval, incurved, but scarcely emarginate at the apex: involucral leaves* 3–4, *bipinnatifid* (*or the umbel sessile, leafy at the base?*).—CAUCALIUM, Nutt.

1. *C. microcarpa* (Hook. & Arn.): sparsely-pubescent; leaves bipinnately divided; the segments pinnatifid, with linear lobes; leaves of the involucre resembling those of the stem; umbel of 3–5 somewhat elongated rays,

Is, this Caucalis [illegible] [illegible] [illegible], [illegible] 1832,

sometimes proliferous; umbellets 5–8-flowered; fruit elliptical; prickles incurved and simple at the apex.—*Hook. & Arn.! bot. Beechey, suppl. p.* 348. Caucalium daucoides, *Nutt.! mss.*

California, *Douglas! Nuttall!*—Plant about a span long, somewhat branching, slender. Leaves finely divided, with short linear ultimate lobes. Rays of the umbel slender, 1 or 2 of them often proliferous (or producing a second compound umbel). Flowers white, very minute. Leaflets of the involucel about 5, short, occasionally 3-cleft, but usually entire. Fruit about 2½ lines long; prickles slender, their length rather less than the diameter of the carpels. Seed deeply sulcate by the inflexion of the margin, but not involute.—The fruit of this plant is exactly that of some species of Caucalis; but the petals are different, and the habit is somewhat peculiar, on which account Mr. Nuttall considers it a distinct genus. He regards the umbel as sessile at the summit of a leafy branch.

TRIBE XI. SCANDICINEÆ. *Koch; DC.*

Fruit compressed or contracted laterally, usually rostrate. Carpels with 5 equal filiform or winged ribs, of which the lateral ones are marginal; all of them sometimes obliterated at the base and only conspicuous at the apex. Seed teretely convex, either furrowed on the face or involute.—Umbels compound.

40. CHÆROPHYLLUM. *Linn.; Hoffm. Umb.* 1. *p.* 33; *DC. prodr.* 4. *p.* 224.

Margin of the calyx obsolete. Petals obovate, emarginate, with an inflexed point. Fruit not rostrate, compressed or contracted laterally. Carpels with 5 obtuse equal ribs. Commissure deeply furrowed. Intervals with single vittæ. Carpophore 2-cleft. Seed teretely convex; the transverse section semilunar.—Perennial, biennial, or annual herbs. Leaves decompound, the segments toothed or many-cleft. Involucre none, or few-leaved. Involucel many-leaved. Flowers white or occasionally rose color, rarely yellow.

1. *C. procumbens* (Lam.): stem decumbent or nearly erect; leaves bipinnately divided; segments pinnatifid; the lobes oblong or lanceolate-oblong, rather obtuse; umbels opposite the leaves, usually sessile, of 2–3 (rarely 4) rays; involucre none; involucels of 4–5 ovate-oblong leaflets; fruit narrowly oblong, abruptly contracted at the summit; ribs scarcely as broad as the intervals.—*Lam. dict.* 1. *p.* 685; *Pursh, fl.* 1. *p.* 195; *Nutt.! gen.* 1. *p.* 194; *Ell. sk.* 1. *p.* 357; *Darlingt. fl. Cest. p.* 198. Scandix procumbens, *Linn. spec.* 1. *p.* 257. Myrrhis procumbens, *Spreng. Umb. prodr. p.* 29, & *in Schult. syst.* 6. *p.* 516; *Torr.! fl. p.* 309.

β. Shortii: umbels pedunculate; fruit oblong, not contracted at the summit.

Moist shady places, particularly along rivers, New Jersey! to North Carolina! South Carolina, *Elliott.* Arkansas, *Nuttall.* Kentucky (as also *β.*) *Dr. Short!* April–May.—① or ② Stem 6–18 inches long, usually decumbent, but sometimes erect or oblique, when young more or less hairy, but often nearly glabrous except the sheaths and margin of the leaves. Lobes of the leaves 1–2 lines wide, mostly obtuse. Umbel (except in *β.*) either entirely sessile or on a very short peduncle. Involucel at first equal to the umbellets, but by the growth of the pedicels becoming much shorter. Petals oval, entire, sometimes cuspidate; the point extended or incurved. Fruit about one-third of an inch long, and the length 4–5 times greater than the breadth (in *β*. about 3 times): ribs rather flat.

2. *C. Tainturieri* (Hook. & Arn.): stem decumbent or erect; leaves bipinnately divided; segments pinnatifid; the lobes linear-oblong, rather acute; umbels opposite the leaves, usually sessile; umbel of 2–3 rays; involucel of 4–5 ovate leaflets; fruit linear-oblong, attenuated upwards; ribs very prominent, much broader than the intervals.—*Hook. & Arn. in compan. to bot. mag.* 1. *p.* 47.

α. fruit glabrous. *Hook. & Arn. l. c.*—C. daucophyllum, *Nutt.! mss.*

β. fruit pubescent. *Hook. & Arn. l. c.*—C. dasycarpum, *Nutt.! mss.*

Prairies and along rivers, Louisiana! Arkansas! Texas!—① ? Stem slender, branching, usually more or less retrorsely hirsute. Leaves more finely divided and the ultimate segments shorter than in the preceding species; the fruit also narrower and attenuated into a kind of beak.

C. arborescens (Linn.) was founded on "Cicuta arbor Virginiana," *Banist.* ex *Pluk. mant.*, a plant which is neither described nor figured in that work, and is now altogether unknown. It is possibly Aralia spinosa.

41. OSMORHIZA. *Raf. in jour. phys.* 1821; *DC. prodr.* 4. *p.* 232.

Uraspermum, *Nutt.*

Margin of the calyx obsolete. Petals oblong, nearly entire; the point cuspidate and incurved. Stylopodium conical. Fruit linear-elongated, acutangular, solid, attenuated at the base, contracted at the sides. Ribs of the carpels acute, upwardly bristly. Intervals without vittæ. Commissure with a deep bristly channel. Seed somewhat terete.—Perennial herbs (natives of North America and Nepaul), with fusiform aromatic roots. Leaves biternately divided; the segments ovate or ovate-oblong, incisely toothed. Umbels opposite the leaves. Involucre of 2–4 linear-lanceolate leaflets. Involucel about 5-leaved. Flowers white.—*Sweet Cicely.*

1. *O. longistylis* (DC.): styles filiform, nearly as long as the ovary; fruit clavate.—*DC. prodr.* 4. *p.* 232; *Hook. fl. Bor.-Am.* 1. *p.* 271. *t.* 96; *Darlingt. fl. Cest. p.* 199. Uraspermum Claytoni, *Nutt.! gen.* 1. *p.* 193 (excl. syn.); *Bigel. fl. Bost. ed.* 2. *p.* 112; *Spreng. in Schult. syst.* 6. *p.* 508. Myrrhis foliis trilobatis, *Gronov.! Virg. p.* 148.

Rich moist soils, throughout Canada! (*Hooker*) to New York! and Virginia! west to Saskatchawan & Oregon. May.—Root fasciculate and somewhat fleshy, of a sweet spicy flavor, resembling *Anise*, as is the rest of the plant, though in a less degree. Stem 2–3 feet high, often pubescent when young, as well as the petiole and peduncles; at length nearly glabrous. Radical and lower cauline leaves on long petioles; the segments broadly ovate, slightly pubescent both sides, shining underneath, somewhat lobed towards the base. Umbels about 4-rayed, pedunculate; the rays 1–2 inches long. Involucre of 1–3 narrowly lanceolate and ciliate leaflets. Umbellets 3–6-flowered. Involucels of about 5 lanceolate cuspidate leaflets. Flowers twice as large as in the succeeding species. Petals with a very long incurved point. Fruit dark green or blackish, hispid and much attenuate below, rather obtuse at the summit, crowned with the slender and at length diverging styles.

2. *O. brevistylis* (DC.): styles conical, their length scarcely equal to the

breadth of the ovary; fruit somewhat tapering at the summit.—*DC.! prodr.* 4. *p.* 232; *Hook.! fl. Bor.-Am.* 1. *p.* 271, *t.* 97; *Bongard, veg. Sitcha, l. c. p.* 142; *Darlingt. fl. Cest. p.* 200. Myrrhis Claytoni, *Michx.! fl.* 1. *p.* 170; *Torr.! fl.* 1. *p.* 308. Chærophyllum Claytoni, *Pers. syn.* 1. *p.* 320; *Ell. sk.* 1. *p.* 358? Uraspermum hirsutum, *Bigel. fl. Bost. ed.* 2. *p.* 112.

Rocky moist woods, Canada! to Pennsylvania! and South Carolina? and west to Oregon, *Dr. Scouler! Nuttall!* Sitcha, *Bongard.* May.—Root of a sweetish but rather disagreeable taste, and without the anise flavor of the preceding species. Stem pale green, when growing in dry and exposed situations hoary-pubescent in the young state, but in shady places nearly glabrous. Leaves sprinkled with short hairs on both surfaces, somewhat shining beneath; secondary divisions pinnatifid; the segments oblong, incisely and sharply serrate. Umbel with longer rays than in the preceding species. Involucre and involucels at length deciduous. Petals with a short incurved point.—The Oregon plant Mr. Nuttall considers a distinct species, which he calls O. divaricata.

42. GLYCOSMA. *Nutt. mss.*

Margin of the calyx obsolete. Petals obovate, emarginate, with a short inflexed point. Styles very short. Stylopodium depressed. Fruit linear-oblong, compressed at the sides, solid, glabrous. Carpels with 5 acutely carinate ribs. Intervals without vittæ. Carpophore 2-cleft.—A large perennial herb, with the sweet anisate odor of Myrrhis. Leaves biternately divided; the segments incisely serrate. Umbels opposite the leaves, and terminal. Involucre and involucel none. Flowers white.

Nearly allied to Myrrhis & Osmorhiza, differing from the latter in its glabrous fruit; from the former in its solid fruit, extremely short styles, as well as in habit; and from both, in the depressed (not conical) stylopodium, and the absence of involucels.

G. occidentalis (Nutt.! mss.)

Western side of the Blue Mountains of Oregon, *Nuttall!* In the interior country of Oregon, *Douglas!*—Plant slightly pubescent, 2–3 feet high, stout. Stem terete, fistulous, branching. Lower leaves on long petioles; those of the stem sessile: segments about 2 inches long, lanceolate-oblong; the terminal one usually 3-parted or lobed. Umbels on long peduncles, solitary in the axils of the upper leaves, or 2–3 together at the summit of the branches, about 8-rayed; the rays unequal, several of them bearing only abortive flowers. Fruit blackish-green and shining, about as large as in Osmorhiza, somewhat rostrate, crowned with 2 very minute diverging styles. Seed adhering to the integuments, so that the fruit is solid: albumen with a deep furrow in front.

TRIBE XII. SMYRNIEÆ. *Koch; DC.*

Fruit turgid, mostly laterally compressed or contracted. Carpels with 5 ribs; the lateral ones marginal or placed opposite the margin, sometimes nearly obliterated. Seed involute, or sulcate on the face.—Umbels compound.

43. CONIUM. *Linn.; DC. prodr.* 4. *p.* 242.

Margin of the calyx obsolete. Petals obcordate, with a short inflexed point. Fruit ovate, compressed at the sides. Carpels with 5 prominent equal undulate-crenulate ribs; the lateral ones marginal. Intervals without vittæ. Seed with a deep narrow groove on the face.—Biennial poisonous herbs. Root fusiform. Stem terete, branched. Leaves decompound. Involucre and involucels 3–5-leaved; the latter unilateral. Flowers white. —*Poison Hemlock.*

1. *C. maculatum* (Linn.): stem glabrous, spotted; segments of the leaves lanceolate, pinnatifid, the lobes acute; leaflets of the involucel lanceolate, shorter than the umbel.—*Linn. spec.* 1. *p.* 243; *Engl. bot. t.* 1191; *Pursh, fl.* 1. *p.* 195; *Bigel. fl. Bost. ed.* 2. *p.* 110, *& med. bot.* 1. *p.* 113, *t.* 11; *Torr.! fl.* 1. *p.* 312; *Hook. fl. Bor.-Am.* 1. *p.* 272.

Road sides and waste places, common in the Northern and Middle States: introduced from Europe. July.—Root white and fleshy. Stem 2–5 feet high, often spotted with purple. Leaves bright green, with long sheathing petioles. Flowers in terminal umbels. Involucre about 5-leaved. Fruit somewhat gibbous; the ribs distinctly undulate.—The plant is a powerful narcotic, and the leaves exhale a disagreeable odor when bruised.

44. EULOPHUS. *Nutt. in DC. mem. Umb. p.* 69, *t.* 2, *f. M.*

Perideridea, *Reichenb.*

Margin of the calyx 5-toothed, at length deciduous. Petals broadly obovate, emarginate, with a long closely inflexed point. Fruit contracted at the sides and somewhat didymous. Carpels with very indistinct ribs, surrounded with contiguous large vittæ. Commissure with 4 vittæ. Transverse section of the seed semilunar. Carpophore 2-parted.—A perennial glabrous herb. Leaves biternately divided, with long narrow segments. Involucre none, or of 1–2 setaceous leaflets. Involucels of several linear leaflets. Flowers apparently white.

Differs from Physospermum, to which it is nearly allied, in its numerous vittæ.

E. Americanus (Nutt.! l. c.)—*DC.! l. c., & in prodr.* 4. *p.* 248.

Arkansas, *Nuttall!*—Root thick and fusiform, 3–4 feet high. Stem terete, finely striate, sparingly branched above. Cauline leaves with long clasping sheaths; the ultimate segments lanceolate-linear, acute, half an inch to an inch or more in length: uppermost leaves ternately divided, with long nearly entire segments. Umbels on long slender peduncles, 7–10-rayed. Fruit about 2 lines long, ovate; the pericarp separating from the seed at the commissure, leaving a considerable cavity. Vittæ in a close row, completely surrounding the seed, so that the ribs can scarcely be seen, filled with a strong terebinthine oil.

45. CYNAPIUM. *Nutt. mss.*

Margin of the calyx obsolete. Petals broadly obovate, emarginate; the point inflexed. Stylopodium minute, depressed. Styles nearly as long as the ovary, reflexed. Fruit oval, moderately contracted at the sides. Carpels with 5 acutely carinate equidistant ribs. Vittæ 3–5 in the intervals, 4–8 in the commissure. Transverse section of the seed deeply reniform, with a central projection. Carpophore 2-parted.—A tall perennial herb. Leaves biternately dissected. Involucre none. Involucel few-leaved, lateral. Flowers white.

Allied to Eulophus and Physospermum, but differs in the carinately ribbed fruit, as well as in other characters: the pericarp, as in those genera, separates from the seed at the commissure, leaving a wide cavity.

C. apiifolium (Nutt.! mss.)

α. stem leafy; segments of the leaves incisely serrate or toothed towards the apex.—C. apiifolium, *Nutt.! mss.*

β. stem nearly naked above; segments of the leaves entire or lobed.—C. nudicaule, *Nutt.! mss.*

Plains of Oregon, near the confluence of the Wahlamet, *Nuttall!* June–July.—Stem 3–4 feet high, terete, branching only towards the summit. Umbels 3–4, on long peduncles. Cauline leaves with the petiole ternately divided to the short dilated sheath: secondary divisions pinnatifid; the segments three-fourths to 1½ inch long and half an inch or more in breadth; the serratures large and mucronate. Rays of the umbel 15–24, long and slender. Fruit about 2½ lines long, dark brown: ribs wide at the base, but strongly keeled. Seed broadly and rather deeply grooved, with a longitudinal projection or blunt ridge down the middle of the face, so that it is only imperfectly campylospermous.

46. DEWEYA.

Calyx-teeth 5, subulate, persistent. Petals obovate and obcordate, with a long inflexed point. Styles long and slender. Stylopodium depressed. Fruit oblong-elliptical, laterally compressed, glabrous, with 5 primary elevated and somewhat winged ribs; the lateral ones marginal. Intervals with 3 vittæ. Commissure with 4 vittæ. Seed free; the transverse section semilunar.—A perennial glabrous herb. Leaves all radical, simply pinnately divided; the segments broadly ovate and cordate, acutely and numerously toothed. Umbel with many rays. Involucre none. Involucel 4–5-leaved; the leaflets lanceolate, entire, or with 2–3 cuspidate teeth. Flowers pale yellow.—Taste of the fruit similar to that of Ligusticum Scoticum.

We dedicate this genus to our highly valued friend Professor C. Dewey, author of an excellent monograph of North American Carices, and of numerous memoirs on various branches of natural science.

D. arguta.—Ligusticum argutum, *Nutt.! mss.*

Woods of St. Diego, California, *Nuttall!* April.—"Root large, tuberous and somewhat fusiform." Leaves including the petioles, 6–8 inches long; the segments an inch or more in length, and nearly orbicular, of a firm texture; the lowest pair distinctly petiolulate; terminal one often 3-lobed: all sharply dentate completely round with numerous mucronate spreading teeth. Peduncle 1–1½ foot long, sometimes bearing two umbels, terete, stout. Rays of the umbel erect in fruit, 2–3 inches long; of the umbellets 1–2 lines long, crowded. Fruit nearly one-third of an inch in length, moderately compressed, but not contracted at the commissure. Intervals broad and a little convex, dark green. Seed free, but without any cavity between it and the pericarp.

47. MUSENIUM. *Nutt. mss.*

"Margin of the calyx 5-toothed; the teeth persistent. Petals obovate; the point inflexed. Styles slender, reflexed, rather long. Fruit ovate or ovate-oblong, laterally compressed. Carpels more or less minutely scabrous, with 5 filiform acute slightly prominent ribs. Intervals with 2–3 vittæ. Commissure with 4 vittæ. Carpophore 2-cleft. Seed with the sides moderately incurved. Perennial dwarf rather fœtid resiniferous (North American) herbs, with fusiform roots, and a short caudex, or branching dichotomously from the base. Leaves 2–3-pinnatifid. Involucre none. Involucels unilateral, of a few rather rigid narrow leaflets. Flowers yellow or white." *Nutt.*

§ 1. *Stem dichotomous: flowers yellow.*

1. *M. divaricatum* (Nutt.! mss.): decumbent; stem short, dichotomously branching from the base; leaves bipinnatifid; divisions confluent with the winged rachis; segments short, rather acutely toothed; fruit somewhat glabrous.—Seseli divaricatum, *Pursh, fl.* 2. *p.* 732? ; *Nutt. gen.* 1. *p.* 194; *DC. prodr.* 4. *p.* 146. [illegible]

β. Hookeri: rachis narrow; fruit scabrous, with elevated points.—M. Hookeri, *Nutt.! mss.* Seseli divaricatum, *Hook.! fl. Bor.-Am.* 1. *p.* 264; *Sims, bot. mag. t.* 1742. (ex *Hook.*)

Naked and arid hills and plains of the Upper Missouri, *Nuttall!* *β.* Plains of the Upper Platte, near the Rocky Mountains, *Nuttall!* On the Saskatchawan, *Drummond! Douglas.* May.—Plant about a span long. Leaves all, except the radical ones, opposite, glabrous and shining: petiole and rachis distinctly winged: lamina with an ovate outline; primary and secondary divisions 3–4 pairs; the segments about one-third of an inch long, 3–4-toothed. Peduncles 4–5 inches long, scabrous, naked, rigid, stout. Umbels 10–20-rayed; the rays (in fruit) about half an inch long. Fruit 2 lines long, oblong-ovate: pericarp thin: vittæ filled with a strong terebinthine oil.—The plant exudes small drops of resin spontaneously.

2. *M. trachyspermum* (Nutt. mss.): "decumbent; leaves bipinnatifid; segments pinnatifid, rather obtuse, the lobes often 2–3-cleft and very short; rachis wide; fruit short, oval, pulverulently scabrous."

"With the preceding, to which it is nearly allied, but differs in the fruit; which is only half as large, the breadth nearly equalling the length. Involucel about 8-leaved, short." *Nuttall.*

3. *M. angustifolium* (Nutt.! mss.); "decumbent, with several stems from one root; leaves bipinnatifid, with a wide rachis; the uppermost almost simply pinnatifid; segments lanceolate, entire, or acutely denticulate; fruit elliptical, slightly scabrous.

"Plains of the Upper Platte, within the Rocky Mountains.—Differs from the preceding species in the longer leaves, and distant, narrow, less divided segments." *Nuttall.* [illegible]

[illegible] I think.

§ 2. *Stemless: flowers white.*—DAUCOPHYLLUM, Nutt. mss.

4. *M. tenuifolium* (Nutt.! mss.): erect and somewhat cæspitose; leaves

all radical, tripinnately divided; the segments narrowly linear, acute; fruit nearly glabrous. [illegible]

Rocky Mountains, *Nuttall!*—Plant about a span high, of a glaucous hue, growing in tufts. Leaves divided like those of the Carrot, but much smaller. Peduncle much longer than the leaves, with a small crowded umbel of 12–20 rays. Involucel 7–9-parted; the segments lanceolate. Fruit (immature) oblong-elliptical; the ribs nearly obsolete: intervals with 2–3 conspicuous vittæ, which are filled with a more aromatic oil than in the species of the preceding section.

Series 3. *Seed with the base and the apex curved inwards, or saccately concave.* (Subord. CŒLOSPERMÆ, *DC.*)

TRIBE XIII. CORIANDREÆ. *Koch; DC.*

Fruit globose; or the carpels subglobose and didymous: primary ribs of each carpel 5, depressed and flexuous, or nearly obsolete; the secondary ones 4, more prominent: all wingless.—Umbels compound.

48. ATREMA. *DC. mem. Umb. p.* 71, *t.* 18, *& prodr.* 4. *p.* 250.

Calyx-teeth 5, acute, small, persistent. Petals obovate, deeply emarginate. Fruit didymous. Carpels subglobose, ventricose, with 4 somewhat prominent ribs. Vittæ none. Commissure closed. Seed conspicuously involute at the base and summit.—An annual herb, with angular stems; the angles, as well as the rays of the umbels and margin of the leaves, muricate-scabrous. Leaves many-cleft, with linear segments. Umbel and umbellets 5–8-rayed. Involucre and involucels of several 3-cleft or entire leaflets. Flowers white. Fruit with but little taste, from the absence of vittæ.

A. Americana (DC.! l. c.)

Prairies of Arkansas, *Nuttall! Dr. Leavenworth! Dr. Hale!* Texas, *Drummond!*—Plant 12–18 inches high, every part, particularly the angles of the stem near each leaf and below the umbel, roughened with minute callous points. Segments of the leaves almost capillary. Rays of the umbel about an inch long. Involucellate leaves 2–4, ("entire," *DC.*, but trifid in his figure!) divided to the middle; the segments subulate. Fruit resembling that of *Coriander* (Coriandrum sativum), but rather smaller: the primary ribs slightly prominent and somewhat flexuous.

49. APIASTRUM. *Nutt. mss.*

Margin of the calyx nearly obsolete. Petals somewhat orbicular, entire, concave (not inflexed at the apex). Styles very short. Stylopodium minute. Fruit didymous, much contracted at the commissure. Carpels ovate-globose, with 5 slightly elevated rugulose ribs, and single vittæ in the intervals. Carpophore 2-cleft. Seed excavated in front, and incurved at the apex and base.—Small glabrous dichotomously branched (Californian) annuals. Leaves many-parted, with narrow linear segments. Umbels axillary, sessile, of few rays. Involucre and involucels none. Flowers white. "Fruit with the taste of Sison Amomum." *Nutt.*

Perhaps not of this tribe; but the seed is cœlospermous. The habit of the genus is that of Leptocaulis.

1. *A. angustifolium* (Nutt.! mss.): "leaves triternately divided; the divisions of the upper cauline ones simply 3-parted; segments narrowly linear."

β. tenellum (Nutt. mss.): "stem dichotomous from the base; leaves less divided; rays of the umbel very slender; umbellets 1–2-flowered; seed more rugulose."

St. Diego, California, *Nuttall!* April.—Stem about a span long, erect or spreading. Segments of the leaves about half a line in breadth. Rays of the umbel 2–4. Umbellets 3–4-flowered; the pedicels slender, about one-third of an inch long. Fruit scarcely half the size of a mustard seed; the ribs, especially in the dry state, distinctly rugulose.

2. *A. latifolium* (Nutt.! mss.): "leaves biternately divided; the divisions of the lower cauline ones 2–3-cleft; segments oblong.—Leptocaulis inermis, *Hook. & Arn. bot. Beechey, suppl. p.* 347? not of *Nutt.*

With the preceding, *Nuttall! Douglas!*—This seems to differ from A. angustifolium chiefly in the leaves being less divided, and the lobes broader. The plant of Hooker & Arnott here cited, is probably the same as ours; for it exists in Douglas's Californian collection; while the Leptocaulis inermis does not. Hooker & Arnott also state that the fruit is much broader than in the other species (of Leptocaulis), and rugulose, or very slightly tuberculate; in which respects it agrees with Apiastrum.

50. ERIGENIA. *Nutt. gen.* 1. *p.* 187; *DC. prodr.* 4. *p.* 71.

Margin of the calyx obsolete. Petals obovate-spatulate, flat, entire. Stylopodium depressed. Styles filiform, longer than the ovary, recurved. Fruit contracted at the commissure, didymous. Carpels ovate-reniform (one of them often abortive): ribs filiform; the 3 dorsal ones slightly prominent; the lateral ones near the commissure and indistinct. Intervals without vittæ. Seed with a deep broad cavity on the face, gibbously convex on the back.—A small glabrous vernal perennial, with a globose tuberous root, and a short caudex. Leaves 1–2, nearly radical, 2–3-ternately divided; the segments pinnately 3–5-parted. Peduncle elongated. Umbel of 3–4 rays, compound, subtended by a involucre of a single bipinnatifid leaf; or the peduncle may be regarded as a branch, bearing a single sessile leaf and a compound sessile umbel at the summit. Involucel of 3–6 linear-oblong entire leaflets. Umbellets 3–5-flowered. Flowers white.

This genus has no affinity with Hydrocolyle, as Mr. Nuttall has correctly remarked, although it was left in that genus by Richard, and referred, though doubtfully, to the tribe Hydrocotyleæ by De Candolle. The seed is certainly cœlospermous. It does not, however, well agree with the tribe Coriandreæ: perhaps a distinct tribe should be established for its reception.

E. bulbosa (Nutt.! l. c.)—*DC.! prodr. l. c.* Sison bulbosum, *Michx.! fl.* 1. *p.* 169. Hydrocotyle composita, *Pursh, fl.* 1. *p.* 190; *Spreng. in Schult. syst.* 6. *p.* 355; *Torr.! fl.* 1. *p.* 304. H. ambigua, *Pursh, l. c.* 2. *p.* 732. H. bipinnata, *Muhl. cat. ed.* 2. *p.* 29.

Shady alluvial soils, Buffalo, New York! and western parts of Pennsylvania! and on the Ohio! Missouri and other rivers of the Western States. March–April.—Tuberous root about half an inch in diameter. Caudex 1–2 inches high. Leaf solitary; the petiole twice 3-parted: secondary divisions bipinnately dissected; the lobes linear-oblong, mostly obtuse. Peduncles solitary, or sometimes 2 or even 3, from the sheathing base of the petiole, 2–6 inches long. Involucral leaf resembling the radical one, but sessile and much smaller. Umbellets usually 3, at length shorter than the leaflets of the involucel. Petals expanding. Anthers dark purple. Styles tapering, with very minute stigmas.*

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* The Tribes in this Order are so numerous that a conspectus or analysis, like the following, will probably be useful to the student:

Ser. I. ORTHOSPERMÆ.—Albumen flat or flattish on the face.

Umbels simple or imperfect: vittæ usually none.
  Fruit laterally compressed. . . . . 1. Hydrocotyleæ.
  Fruit ovate-globose. . . . . 2. Saniculeæ.
Umbels compound or perfect: vittæ various.
  Fruit with primary ribs only, compressed laterally or didymous. 3. Ammineæ.
  Fruit with primary ribs only; the transverse section orbicular. 4. Seselineæ.
  Fruit with primary ribs only, compressed dorsally.
    Margin of the carpels dilated into a double wing. . . 5. Angeliceæ.
    Margin of the carpels dilated into a single wing. . . 6. Peucedaneæ.
  Fruit with both primary and secondary ribs.
    Ribs all wingless: fruit somewhat laterally contracted. . 7. Cumineæ.
    Secondary ribs mostly winged: fruit terete or somewhat compressed dorsally.
      Wings unarmed. . . . . 8. Thaspieæ.
      Wings prickly, or the secondary ribs armed with prickles. 9. Daucineæ.

Ser. 2. CAMPYLOSPERMÆ.—Albumen with a longitudinal groove internally, or the margins involute.

Fruit with both primary and secondary ribs, all prickly. . 10. Caucalineæ.
Fruit with primary ribs only, laterally compressed.
  Fruit elongated. . . . . 11. Scandicineæ.
  Fruit turgid. . . . . 12. Smyrnieæ.

Ser. 3. CŒLOSPERMÆ.—Albumen involute at the base and apex.

Fruit laterally compressed, didymous, or globose. . . . 13. Coriandreæ.

Order LXIX. ARALIACEÆ. *Juss.*

Calyx adherent to the ovary; the limb usually very small, entire or toothed. Petals 5–10, valvate in æstivation, very rarely none. Stamens as many as the petals and alternate with them: filaments short (2-parted in Adoxa): anthers introrse. Ovary crowned with an epigynous disk, 2–15-celled, with a solitary suspended ovule in each cell: styles erect and connivent, or spreading: stigmas simple. Fruit drupaceous, or baccate, sometimes nearly dry, but the carpels not separating: endocarp chartaceous or membranaceous. Seed solitary in each cell, anatropous. Embryo short, at the base of the copious fleshy albumen.—Shrubs, trees, or perennial herbs, with compound or simple exstipulate leaves; the petioles thickened and dilated at the base. Flowers mostly umbellate; the umbels often paniculate or racemed.

1. ARALIA. *Linn.; Don, prodr. fl. Nep.; DC. prodr.* 4. *p.* 257.

Flowers mostly perfect. Limb of the calyx short, 5-toothed or entire. Petals 5, spreading. Stamens 5, alternate with the petals: filaments short. Styles 5, at length divaricate. Drupe baccate, 5-lobed, 5-celled; the endocarp chartaceous.—Shrubs, trees, or perennial herbs, with mostly compound leaves. Petioles sheathing at the base. Umbels often panicled.

* *Unarmed, mostly herbaceous.*

1. *A. racemosa* (Linn.): stem herbaceous, divaricately branched; leaves ternately and quinately decompound; leaflets cordate-ovate, acuminate, doubly serrate, slightly pubescent; umbels (small) numerous, disposed in large doubly compound racemose panicles; involucre minute or almost none.—*Linn.! spec.* 1. *p.* 273; *Michx.! fl.* 1. *p.* 185; *Schk. handb. t.* 86; *Bigel. fl. Bost. ed.* 2. *p.* 122; *DC.! prodr.* 4. *p.* 257; *Hook.! fl. Bor.-Am.* 1. *p.* 174; *Darlingt. fl. Cest. p.* 209.

Rich woodlands, Canada! from the Saskatchawan to the mountains of Georgia, and west to the base of the Rocky Mountains, *Dr. James!* July.—Root large and thick, strongly aromatic, as well as the whole plant. Stem 3–5 feet high, widely spreading. Leaves and panicles very large. Flowers small, greenish-white. Styles united below. Fruit small, dark-purple. —*Spikenard.*

2. *A. nudicaulis* (Linn.): stem very short or none; leaf mostly solitary, radical; the petiole elongated, 3-cleft, each division pinnately 5-foliolate; leaflets oblong-ovate or oval, acuminate, serrate; scape shorter than the leaf; umbels 3, not involucrate.—*Linn.! spec.* 1. *p.* 274; *Michx.! fl.* 1. *p.* 185; *Torr.! fl.* 1. *p.* 327; *Raf. med. bot.* 1, *t.* 8; *Bigel.! fl. Bost. ed.* 2. *p.* 122; *DC.! prodr.* 4. *p.* 257; *Hook.! fl. Bor.-Am.* 1. *p.* 274; *Darlingt. l. c.*

Rich rocky woodlands, Canada! from lat. 64°, and the Rocky Mountains, and Labrador! to the mountainous portions of the Southern States! May.— Root very long, prostrate, aromatic. Scape sheathed at the base by scarious scales. Umbels globose; the pedicels slender. Flowers greenish-white. Fruit purplish-black when mature, juicy; the endocarp strongly 5-angled. —*Sarsaparilla.*—The root is employed as a substitute for the officinal Sarsaparilla: it is also used medicinally by the aborigines.

3. *A. hispida* (Michx.): stem a little shrubby at the base and very hispid with rigid bristles; leaves bipinnately compound; the petiole often hispid; pinnæ about 3 pairs with a terminal one; leaflets oblong-ovate, acute, incisely serrate, glabrous; umbels several, in a terminal pedunculate corymb; involucre of numerous setaceous leaflets.—*Michx.! fl.* 1. *p.* 185; *Vent. hort. Cels. t.* 41; *Sims, bot. mag. t.* 1041; *Lodd. bot. cab. t.* 1306; *Torr.! fl. l. c.; DC.! l. c.; Hook. l. c.* A. Muhlenbergiana, *Schult. syst.* 6. *p.* 704.

In rocky places, Canada! from Hudson's Bay, Newfoundland! and the New England States! to the mountains of Virginia. June–July.—Stem 1–2 feet high. Leaflets small. Flowers white, in rather large umbels: pedicels filiform.—*Wild Elder.*

* * *Shrubby or arborescent, prickly.*

4. *A. spinosa* (Linn.): stem arborescent, prickly, as also the petioles; leaves bipinnately compound; leaflets ovate, acuminate, serrate, mostly glabrous, glaucous beneath; umbels in a very large and much branched (puberulent) panicle, somewhat racemose on the branches; involucre very small and few-leaved.—*Linn.! spec.* 1. *p.* 273; *Michx.! fl.* 1. *p.* 186; *Pursh, fl.* 1. *p.* 209; *Ell. sk.* 1. *p.* 373; *DC.! l. c.*

β. petioles not prickly.—A. spinosa *β.* inermis, *Pursh, l. c.*

γ. "entirely glabrous; leaflets cordate-ovate, slightly serrulate or nearly entire; the lower leaves mostly unarmed."—A. spinosa *β.* glabra, *Nutt.! mss.*

Rich damp woods, Virginia! to Florida! Louisiana! and Arkansas! June–Aug.—"Plant shooting up many straight shrubby unbranched stems, naked and prickly below, with the leaves crowded at the summit of the stems, like the palm-trees" (*Ell.*): often forming a tree, which "in rich soils attains the height of 30–40, or even 60 feet, with a diameter of 3–12 inches." (*Prof. Carpenter.*) Petioles 2–4 feet long: a pair of leaflets usually subtends each pair of pinnæ. Petals white. Styles at first connivent. The flowers are apparently sometimes polygamous: at least many do not become fertilized. (The bark of the fresh root is employed medicinally, being both emetic and cathartic, &c. It is also one of the popular remedies for the bite of the Rattlesnake.)—*Prickly-Ash. Angelica-tree.*

2. PANAX. *Linn.; Lam. ill. t.* 860; *Endl. gen. p.* 793.

Flowers polygamous. Limb of the calyx very short, obscurely 5-toothed. Petals 5, spreading. Stamens 5, alternate with the petals: filaments short. Fruit fleshy, drupaceous, compressed, orbicular or didymous, 2–3-celled; the endocarp coriaceo-chartaceous.—Perennial herbs, shrubs, or trees, somewhat diverse in habit. Petioles sheathing at the base.

§ 1. *Herbaceous, unarmed: root tuberous: leaves (ternately) verticillate at the summit of the stem, palmately compound: umbel solitary, simple, on a long peduncle.*—EUPANAX. (Aureliana, *Catesb.*)

1. *P. quinquefolium* (Linn.): root fusiform, often branched; leaflets 5, or 6–7, much petiolulate, obovate-oblong, acuminate, the midrib and nerves mostly glabrous; the lateral ones smaller; peduncle about as long as the

petioles; styles and cells of the ovary 2.—*Linn.! spec.* 2. *p.* 1058 (*Catesb. Car. appx. t.* 16); *Michx.! fl.* 2. *p.* 256; *Pursh! fl.* 1. *p.* 191; *Bot. mag. t.* 1333; *Bigel. med. bot.* 3. *p.* 82, *t.* 29; *Bart. veg. mat. med. t.* 45; *Torr.! fl.* 1. *p.* 292; *DC.! prodr.* 4. *p.* 252; *Hook.! fl. Bor.-Am.* 1. *p.* 273; *Darlingt. fl. Cest. p.* 181.

Rich woods, Canada! to the mountains of the Southern States. July.—Root 3–6 inches in length, transversely wrinkled, aromatic (slightly stimulant). Petals yellowish-green. Fruit baccate and bright crimson when ripe.—The P. pseudo-Ginseng, *Wall.* of Nepaul (beautifully figured in the *Plantæ Asiaticæ Rariores*) exceedingly resembles our own well-known *Ginseng.*

2. *P. trifolium* (Linn.): polygamo-diœcious; root globose; leaflets 3–5, lanceolate-oblong, not petiolulate; peduncle nearly as long as the leaves; styles and cells of the ovary mostly 3.—*Linn. l. c.; Michx.! l. c.; Torr.! fl.* 1. *p.* 291; *DC.! l. c.! Hook.! l. c.; Darlingt. fl. Cest. p.* 182. P. pusilla, *Sims, bot. mag. t.* 1334.

Shady woods along streams, Canada! to the mountains of the Southern States! April.—Tuber deep in the ground, pungent to the taste. Stem 4–8 inches high. Flowers white. Fruit yellowish-green.—*Dwarf Ginseng. Ground-Nut.*

§ 2. *Shrubby or arborescent, prickly: leaves palmately lobed, scattered: umbels mostly racemed or panicled.*—OPLOPANAX.

3 *P. horridum* (Smith): creeping at the base, very prickly in every part; leaves roundish-cordate, palmately lobed, incisely serrate; umbels capitate (the flowers often scattered), peduncled, disposed in a long raceme; styles and cells of the ovary 2.—*Smith! in Rees, cyclop.; DC. prodr.* 4. *p.* 252; *Bongard, veg. Sitcha, l. c. p.* 143; *Hook.! fl. Bor.-Am.* 1. *p.* 273, *t.* 98. Aralia erinacea, *Hook.! in Edinb. phil. jour.* 1827; *DC. prodr.* 4. *p.* 259.

Shady fir woods, N. W. Coast and Islands, from Sitcha (*Bongard*), Charlotte Sound, &c., to the Oregon, the interior of California, and the Rocky Mountains, *Menzies! Dr. Scouler! Douglas! Nuttall! Drummond!* and occasionally found on the east side of the Rocky Mountains, according to *Drummond.*—Stem thick, 6–12 feet high: prickles acicular, yellow. Leaves very large.—The entangled stems are a great impediment to travellers in the woods of the North West Coast.

3.? ADOXA. *Linn.; Lam. ill. t.* 320; *Koch, fl. Germ. & Helv. p.* 323; *Endl. gen. p.* 793.

Flowers perfect. Tube of the calyx coherent with the lower part of the ovary; the limb slightly 2–3-cleft. Petals 4–5, inserted on the limb of the calyx, united at the base, spreading. Stamens 4–5, each filament 2-parted; the divisions bearing each a single-celled peltate anther. Styles 4–5 subulate. Fruit an herbaceous and juicy berry, 4–5-celled; each cell with a single suspended seed. Seeds compressed, with a membranaceous margin.—A small and slender perennial herb (indigenous to the north of Europe, Asia, and America), with the odor of musk: root tuberous. Radical leaves 2-ternately compound, on long petioles; the cauline solitary, 1–2-ternate or incised. Flowers 4–6 (greenish), in a terminal capitulum; the lateral ones mostly pentamerous, the terminal tetramerous.

A. Moschatellina (Linn.)—*Fl. Dan. t.* 94; *Engl. bot. t.* 453; *Gærtn. fr. t.* 112; *Schk. handb. t.* 109; *DC.! prodr.* 2. *p.* 451; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 13; *Torr.! in ann. lyc. New York,* 1. *p.* 32; *Hook.! fl. Bor.-Am.* 1. *p.* 273.

In the woody country between lat. 54° and 64°, *Richardson!* and on the Rocky Mountains as far south as about lat. 42°, *Dr. James! Drummond!* but only on the higher peaks.—Koch, who seems first to have described Adoxa correctly, refers it to Caprifoliaceæ.

ORDER LXX. CORNACEÆ. *DC.*

Calyx adherent to the ovary; the limb 4–5-toothed, minute, or 4–5-lobed, with a valvate æstivation. Petals distinct, equal in number to the teeth of the calyx, and inserted alternately with them into the margin of the epigynous disk, broad at the base: æstivation valvate. Stamens 4–5, inserted with the petals and alternate with them: anthers introrse, mostly cordate. Ovary 1–2-celled, with a solitary pendulous ovule in each cell: styles single. Drupes baccate, with a 1–2-celled nucleus, crowned with the remains of the calyx. Seeds anatropous. Embryo nearly the length of the fleshy albumen; the radicle shorter than the oblong cotyledons.—Trees or shrubs, rarely herbaceous, with a bitter bark. Leaves opposite (or rarely somewhat alternate), mostly entire, exstipulate, pinnately veined. Flowers cymose; the inflorescence sometimes capitate and involucrate, rarely diœcious. Hairs centrally affixed.

The centrally affixed bicuspidate hairs, like those of Malpighia, which are noticed by De Candolle in one or two species of Cornus, are common to the whole genus* as well as to Benthamia, and Mastixia pentandra, *Blume.* The latter (a specimen of which we have examined in the herbarium of the Lyceum of Natural History, New York,) is a true Cornaceous plant, and the leaves are, at least sometimes, opposite.

1. CORNUS. *Tourn.; Gærtn. fr. t.* 26; *L'Her. Corn.; Endl. gen. p.* 798.

Limb of the calyx 4-toothed, minute. Petals oblong, spreading. Filaments filiform. Style subclavate: stigma obtuse or capitate. Drupes not connate into a syncarpium.—Leaves entire, minutely scabrous with the appressed bicuspidate hairs. Flowers white, rarely yellow. (Bark very bitter, tonic.)—*Dogwood.*

§ 1. *Flowers cymose: involucre none.*

1. *C. alternifolia* (Linn. f.): branches alternate (greenish); leaves more

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* They are noticed, we find, by Prof. Zuccarini, in the Flora Japonica, now publishing.

or less alternate, broadly oval, acuminate, glabrous above, the lower surface whitish and scabrous with a minute appressed pubescence; cymes loose, spreading; drupes deep blue.—*Linn. f. suppl. p.* 125; *L'Her.! Corn. p.* 10, *t.* 6; *Willd.! spec.* 1. *p.* 664; *Michx.! fl.* 1. *p.* 93; *Torr.! fl.* 1. *p.* 100; *Guimpel, Otto, & Hayne, holz. t.* 43; *DC.! prodr.* 4. *p.* 271; *Darlingt. fl. Cest. p.* 108. C. alterna, *Marsh. arbust.*

In moist woods and thickets, Canada! and Northern States! and along the Alleghanies to the mountains of S. Carolina, and west to Kentucky! May–June.—A small tree (10–20 feet), with a widely spreading depressed top, and a smooth yellowish-green bark, which is generally streaked with oblong white spots or warts. Petioles slender. Flowers cream-color.

2. *C. circinata* (L'Her.): branches (greenish) spotted, verrucose; leaves (large) very broadly oval or orbicular, abruptly acuminate, tomentose beneath with a soft whitish pubescence; cymes rather small, depressed; drupes ovoid-globose, light blue.—*L'Her.! l. c. p.* 9, *t.* 3 (bad); *Willd.! l. c.*; *Guimpel, Otto, & Hayne, holz. t.* 86; *Torr.! fl.* 1. *p.* 179; *Bigel. fl. Bost. ed.* 2. *p.* 276. C. rugosa, *Lam. dict.* 2. *p.* 115? C. tomentulosa, *Michx.! fl.* 1. *p.* 91.

Shady banks of streams, Canada! to the mountains of Virginia, and west to Indiana! not abundant. June.—Shrub 4–8 feet high, with straight slender branches. Leaves 4–5 inches in length, and nearly of the same width, scabrous above, the veins prominent beneath and sometimes rusty-colored. Petals ovate, white. Drupe at length whitish (ex *L'Her.*), small, tipped with the persistent style.

3. *C. stolonifera* (Michx.): stems often reclined and stoloniferous; the shoots virgate, bright reddish-purple; branches glabrous, a little spreading; leaves ovate, slightly acuminate, obtuse at the base, scabrous with a minute appressed pubescence on both sides, whitish beneath; cymes small, flat, rather crowded, nearly glabrous; petals ovate; drupes white.—*Michx.! fl.* 1. *p.* 92. C. alba, *Wang. Amer. p.* 91; *Pursh, fl.* 1. *p.* 109; *Bigel. fl. Bost. ed.* 2. *p.* 58; *Richards. appx. Frankl. journ. ed.* 2. *p.* 5; *Hook.! fl. Bor.-Am.* 1. *p.* 276 (partly). C. alba, partly, *L'Her. l. c.*; *Willd.! l. c.*; *DC.! l. c.* C. sanguinea, *Pursh, l. c.?* not of *Linn.* C. Purshii, *Don, syst. gard. & bot.* 3. *p.* 399.

Banks of streams and in sphagnous swamps, Newfoundland! and throughout Canada! (from lat. 69°, ex *Richards.*) and the Northern States! to about lat 42°: west to Ohio! and Missouri. May–June.—Stems sometimes erect, 5–10 feet high; but usually prostrate and rooting, sending up numerous slender shoots, clothed with a red sparsely punctate bark. Drupes globose, white (lead-colored when fully ripe, ex *Richards.*): according to Nuttall they are eaten by the Missouri Indians, and Dr. Richardson remarks that the bears fatten upon them.—The Cornus alba of Linnæus was established on the Siberian species, which is quite distinct from the North American plant. The former (of which we have examined a specimen cultivated in the Garden of Plants at Paris, under the name of "C. Sibirica, *Loddig.* C. alba, *Pallas.*") has lanceolate petals, and thick divaricate or recurved branches. The latter character has been copied by succeeding authors in their description of the North American plant, although it is quite inapplicable. According to Michaux, this species is called "Osier rouge" by the Canadians. C. sanguinea is mentioned by Linnæus and other authors as indigenous to North America also: we have never seen a native specimen, neither is it found in any of the collections from British America; and we presume this to be the species intended.

4. *C. paniculata* (L'Her.): branches (grayish) erect, glabrous; leaves ovate-lanceolate or oval, finely acuminate, acute at the base, scabrous with a

very minute appressed pubescence, whitish beneath; cymes loose, convex or usually paniculate, glabrous; petals lanceolate; drupes small, depressed-globose, white.—*L'Her.! l. c. p.* 9, *t.* 5; *Willd.! spec.* 1. *p.* 664; *Pursh, fl.* 1. *p.* 109; *Ell. sk.* 1. *p.* 209?; *Torr.! fl. l. c.*; *DC.! l. c.*; *Hook. fl. Bor.-Am.* 1. *p.* 275; *Darlingt. fl. Cest. p.* 108. C. racemosa, *Lam. dict. l. c.?* C. candidissima, *Marsh. arbust.* ex *Darlingt.*

Thickets and hill-sides and banks of streams, Canada and Northern States! to Carolina (ex *Pursh, &c.*): west to the Mississippi. May–June.—Stem erect, 4–6 feet high, covered with a light grayish bark: that of the young branches pale purplish-brown, dotted. Cymes very numerous, thyrsoid, elongated in fruit. Calyx-teeth triangular, very short. Ovary canescent. Anthers yellowish. Drupes about the size of a small pea, when fully ripe acquiring a slight leaden tinge.—This is a very beautiful plant when in flower: it is much (and somewhat fastigiately) branched, and bears the greatest profusion of small pure white blossoms. Notwithstanding the opinion expressed by Hooker and Darlington, we are confident that no two species of the genus are more distinct than this and C. stolonifera. It is much more nearly allied to the succeeding species, which seems to take its place in the Southern States; where we doubt if C. paniculata occurs, except perhaps in the mountains.

5. *C. stricta* (Lam.): branches erect (fuscous), glabrous; leaves ovate or ovate-lanceolate, nearly glabrous and of the same color both sides, conspicuously acuminate, rather acute at the base; cymes loose, sometimes a little paniculate, glabrous; calyx-teeth linear-subulate; petals ovate-lanceolate, acute; anthers pale blue; drupes subglobose, pale blue.—*Lam. dict.* 2. *p.* 116; *L'Her. l. c. p.* 8, *t.* 5; *Pursh, l. c.*; *Ell. sk.* 1. *p.* 209; *DC. prodr.* 4. *p.* 272. (sub nom. *C. striata.*) C. sanguinea, *Walt. Car. p.* 88? C. cyanocarpus, *Gmel. syst. veg.* 1. *p.* 257. C. fastigiata, *Michx.! fl.* 1. *p.* 92.

In swamps, Virginia to Georgia! April.—Shrub 8–15 feet high, with brownish branches: branchlets quadrangular. Leaves when young more or less pubescent, at length glabrous, light green on both surfaces, but very slightly paler beneath. Cymes more flat than in C. paniculata; and the flowers larger: the calyx-teeth are also longer. Drupes (ex descr.) blue externally, the pulp white.—Pursh erroneously gives Canada as a habitat of this species. We believe it is confined to the Southern States. De Candolle states it to be also a native of Mexico.

6. *C. asperifolia* (Michx.): branches erect, scabrous-pubescent; leaves oblong-ovate or mostly oval-lanceolate, on very short petioles, acuminate, hispidly scabrous above, tomentose-pubescent beneath; cymes fastigiate, scabrous with a minutely hispid pubescence; calyx-teeth minute; petals oblong-lanceolate (fruit unknown).—*Michx.! fl.* 1. *p.* 93; *Ell. sk.* 1. *p.* 209. C. sericea, *γ. DC.! prodr.* 4. *p.* 272.

β.? branches spreading; leaves mostly larger and ovate; petioles a little longer.

Dry sandy soil, S. Carolina! Georgia! and Florida! *β.* Kentucky, *Dr. Short!* June.—This appears to be a very distinct species, resembling C. stricta rather than C. sericea (but our *β.* again is near the latter), with small and usually quite narrow rough leaves. The anthers are blue, or, according to Elliott, purple.

7. *C. sericea* (Linn.): branches spreading (purplish); the branchlets, cymes and petioles lanuginous; leaves ovate or elliptical, acuminate, nearly glabrous above, silky-pubescent beneath; cymes depressed, crowded; calyx-teeth lanceolate; petals lanceolate-oblong, obtuse; drupes subglobose, pale blue.—*Linn. mant. p.* 199, *& syst. veg. ed. Murray, p.* 159; *L'Her.! l. c. p.* 5, *t.* 2; *Willd.! spec. l. c.*; *Pursh, l. c.*; *Ell. l. c.*; *Torr.! fl.* 1. *p.* 178;

DC.! prodr. 4. *p.* 472; *Darlingt. fl. Cest. p.* 107. C. alba? *Walt. l. c.* C. cærulea, *Lam. l. c.?* C. rubiginosa, *Ehrh. beitr.?* C. lanuginosa, *Michx! fl.* 1. *p.* 92. C. cyanocarpus, *Mœnch*, not of *Gmel.* C. obliqua, *Raf.! ann. nat. p.* 13.

β.? occidentalis: leaves larger, more tomentose beneath.—C. circinata, *Cham. & Schlecht. in Linnæa*, 3. *p.* 139. C. alba *β. Hook.! l. c.* C. pubescens, *Nutt. mss.*

Banks of streams and in wet meadows, Canada! to Georgia! and Louisiana. May–June. *β.* N. W. Coast, *Douglas*, *Mr. Tolmie! Dr. Scouler!* and St. Francisco, California, *Chamisso.*—Stem 6–10 feet high; the bark greenish-purple or usually brownish-purple. Leaves pale green, commonly narrowly ovate and conspicuously acuminate; sometimes almost lanceolate; sometimes large, broadly ovate, and at length nearly glabrous (except the veins) beneath: pubescence of the lower surface soft, either whitish or rusty-colored, especially the veins. Petals yellowish-white. Stigma thick, capitate.—A well-marked species, although exhibiting many diversities in foliage.

§ 2. *Flowers capitate, surrounded by a petaloid involucre: trees.*

8. *C. florida* (Linn.): leaves of the involucre 4, obcordate, or with a callous notch at the apex; drupes oval; leaves ovate, acuminate.—*Linn.! hort. Cliff. p.* 38, & *spec.* 1. *p.* 117; *Willd.! spec.* 1. *p.* 661; *L'Her. l. c. p.* 4; *Michx.! fl.* 1. *p.* 91; *Bot. mag. t.* 526; *Michx. f. sylv. t.* 48; *Bigel. med. bot.* 2. *t.* 73; *Bart. veg. mat. med.* 1, *t.* 3; *Ell. sk.* 1. *p.* 207; *Darlingt. fl. Cest. p.* 107; *Guimp. Otto, & Hayne, holz. t.* 19.

Woods and low grounds, Canada! to Florida and Louisiana! May–June: in the Southern States, March–April.—Tree 15–30 feet high, with expanding branches; the bark grey: wood hard and close-grained. Leaves ovate or elliptic, acute at the base, whitish beneath; when young pubescent, especially on the veins. Involucre about 3 inches in diameter, white, often with a tinge of red. Petals greenish-yellow. Drupes bright red.—*Common Dogwood. Flowering Dogwood.*

9. *C. Nuttallii* (Audubon): leaves of the involucre 4–6, obovate, acute or acuminate, narrowed at the base; drupes oval; leaves oval, scarcely acuminate.—*Audubon! birds of Amer. t.* 367. C. florida, *Hook. fl. Bor.-Am.* 1. *p.* 277, partly.

Oregon, *Dr. Scouler! Mr. Tolmie! Nuttall!*—Mr. Nuttall considers this a very distinct species, and we incline to this opinion, although the involucre is not constantly 6-leaved. The heads and involucres are usually considerably larger than in C. florida.

§ 3. *Flowers in contracted umbel-like cymes, surrounded by a petaloid involucre: stems herbaceous.*

10. *C. Canadensis* (Linn.): flowering stems simple, ascending, the subterranean trunk creeping, a little woody; upper leaves verticillate, on very short petioles; involucre 4-leaved, much longer than the flowers; petals greenish-white; drupes bright red, subglobose.—*Linn. amœn. acad.* 1. *p.* 157, & *spec. l. c.*; *L'Her. l. c. p.* 2, *t.* 1; *Bot. mag. t.* 880; *Michx.! fl.* 1. *p.* 91; *Bigel.! fl. Bost. ed.* 2. *p.* 57; *Torr.! l. c.*; *DC.! prodr. l. c.*; *Cham. & Schlecht. in Linnæa*, 3. *p.* 138; *Hook.! fl. Bor.-Am.* 1. *p.* 277.

Damp woods and shady swamps, Pennsylvania and New England States to Labrador! and Newfoundland! and nearly to the Arctic Coast, (as far as the Pine woods extend, *Richardson*): west to Oregon! Unalaschka and Sitcha! May–June.—Flowering stems about 6 inches high, with one or two pairs of opposite leaves, or sometimes bracts, and a whorl of about 6 oval or ovate acuminate leaves at the summit. These leaves are not strictly verticillate, but the apparent whorl arises from the development of a very short branch (producing usually a pair of leaves only) in the axils of the upper pair of cauline leaves. Leaves of the involucre broadly ovate, greenish-white and petaloid, surrounding the inconspicuous umbel-like cyme of flowers. Ovary turbinate, canescently hairy. Drupe baccate, rather large, sweetish: a botanical friend informs us that in the northern portions of the New-England States, the fruit is employed as an ingredient in plum-pudding, and is called *Pudding-berry*.—The more arctic forms of this species, particularly those from the North West Coast, as Chamisso remarks, often approach C. Suecica in appearance.—We possess an interesting specimen of C. Canadensis, from St. Lawrence County, New York, in which the cyme is more developed than usual, divided into four primary branches, each arising in the axil of an involucral leaf and adnate to its short petiole: the secondary branches of the cyme are in like manner furnished with similar, though smaller, involucral leaves.

11. *C. Suecica* (Linn.): flowering stems sometimes branched; leaves all opposite, sessile, the nerves all arising from the base; petals dark purple; drupes red, globose.—*Linn.! fl. Lapp. n.* 65, *t.* 5, *f.* 3, *& spec.* 1. *p.* 118; *Fl. Dan. t.* 5; *Engl. bot. t.* 310; *Wahl. fl. Lapp. p.* 50; *L'Her. l. c. p.* 2, *t.* 1; *DC.! prodr.* 4. *p.* 274; *Cham. & Schlecht.! in Linnæa*, 3. *p.* 138; *Hook.! fl. Bor.-Am.* 1. *p.* 277.

In shady damp woods, Greenland! Labrador! and Newfoundland! to Kotzebue's Sound! Sitcha! &c.: south to Brandy-Pots Island in the St. Lawrence (*Hooker*), and on the Pacific Coast to Fort Vancouver.

ORDER LXXI. LORANTHACEÆ. *Juss.*

Perianth in the unisexual flowers sometimes none, or often simple (calyx), adnate to the ovary in the fertile flowers, 3–5-cleft in the sterile flowers; in the perfect flowers double, viz: Calyx adnate to the ovary; the limb entire or denticulate, or often obsolete. Corolla of 3–4 or 8 petals, either distinct, or more or less coherent in a tube, inserted into the epigynous disk: æstivation valvate. Stamens equal in number with the petals and opposite them, or as many as the segments of the calyx and inserted upon them when the perianth is simple. Ovary 1-celled, with a single suspended ovule: style simple, or none. Fruit baccate, 1-celled, 1-seeded. Seed anatropous; the membranous testa often adhering to the walls of the fruit. Embryo in a superficial cavity of the fleshy albumen: radicle clavate, often exserted: cotyledons obtuse, sometimes connate.—Parasitical half-shrubby evergreen plants, with dichotomous stems. Leaves mostly opposite, fleshy or coriaceous, almost veinless; sometimes reduced to scales or entirely wanting. Stipules none. Flowers unisexual and small (whitish or greenish-yellow), or perfect and very showy.

1. VISCUM. *Tourn.; Gærtn. fr. t.* 27; *Endl. gen. p.* 801.

Flowers monœcious or diœcious. STERILE FL. Perianth simple, coriaceous-fleshy, 4- (or rarely 3–5-) parted; the segments triagular, erect, valvate in æstivation. Anthers as many as the lobes of the perianth, and inserted on them near the middle, many-celled, opening by numerous pores. Ovary a glandular rudiment, or none. FERTILE FL. Limb of the calyx obsolete. Petals 4, rarely 3–5, coriaceous-fleshy, epigynous. Rudiments of stamens none. Stigma sessile, obtuse. Berry pulpy. (Embryos often several.)—Branches often articulated, terete, 4-sided, or compressed. Leaves opposite or very rarely alternate, sometimes scale-like or none. Flowers spicate or fascicled.—*Misseltoe.*

1. *V. flavescens* (Pursh): branches terete, opposite, and sometimes verticillate; leaves cuneate-obovate, obtuse, 3-nerved; spikes axillary, interrupted, mostly shorter than the leaves; berries yellowish-white, pellucid.—*Pursh, fl.* 1. *p.* 114 (excl. syn. which relates to V. flavens); *DC.! prodr.* 4. *p.* 280. V. album, *Walt.; Muhl. cat.* V. verticillatum, *Nutt.! gen.* 2. *p.* 235; *Ell. sk.* 2. *p.* 677, not of *Linn.*
On branches of mostly old or decaying trees, sometimes on the pine and cedar, New Jersey! and Ohio! to Florida and Lousiana! April–May.—Perianth usually 3-cleft in the sterile flowers.

2. *V. villosum* (Nutt. mss.): "villous with a close soft pubescence; branches terete, opposite; leaves cuneate-oblong, obtuse, scarcely nerved; spikes axillary, interrupted, much shorter than the leaves.—V. tomentosum, *DC. prodr.* 4. *suppl. p.* 670?
"On oak trees in the woods of the Wahlamet, Oregon.—Allied to V. flavescens; but with narrower leaves, &c. Calyx of the fertile flower 2–3-cleft. Berries white." *Nuttall.*

V. rubrum and *V. purpureum* of Linnæus are natives of the Bahama Islands, but not of the United States.

V. terrestre (Linn.) is, according to Willdenow, a bulbiferous state of Lysimachia stricta.

2. ARCEUTHOBIUM. *Bieberst. fl. Taur.-Cauc. suppl. p.* 629; *Hook. fl. Bor.-Am.* 1. *p.* 278, *t.* 99; *Endl. gen. p.* 800.

Flowers diœcious. STERILE FL. Perianth simple, between corneous and fleshy, 2–3- or rarely 4-cleft; the segments ovate, concave, spreading. Anthers as many as the lobes of the perianth, and inserted on them near the middle, sessile, subglobose, 1-celled, dehiscent by a transverse line, membranaceous. Rudiment of the ovary glandular, 2–3-lobed. FERTILE FL. Perianth simple; the tube oval, compressed, connate with the ovary; the limb 2-toothed. Rudiments of stamens none. Stigma sessile, small, obscurely lobed. Berry somewhat terete, pulpy. A small much-branched parasitic shrubby plant, leafless; the branches opposite, articulated; the joints dilated at the summit into a truncate sheath. Flowers small, terminal and lateral, 3 or more together.—The plant grows only on trees of the order Coniferæ.

A. Oxycedri (Bieberst. l. c.)—*Hook.! fl. Bor.-Am.* 1. *p.* 278, *t.* 99. A. Americanum, *Nutt. mss.?* Viscum Oxycedri, *DC. fl. Fr. ed.* 3. *p.* 901; *Bieberst. fl. Taur.-Cauc.*; *DC. prodr.* 4. *p.* 283.

On pine trees, Oregon, *Douglas!* and east to Hudson's Bay in lat. 57°, *Douglas & Drummond*, fide *Hook.*—We have not seen specimens of Mr. Nuttall's A. Americanum, and his notes leave us uncertain whether he considers his plant (from the Blue Mountains of Oregon) a different species from that of Hooker, or views the American plant generally as distinct from that of the Old World. His character accords for the most part with specimens received from Hooker, in which the sheaths are almost all truncate. Mr. Nuttall's plant is said to have a white berry: the fruit of Viscum Oxycedri is said by De Candolle to be blue.

SUPPLEMENT.

ADDITIONS AND EMENDATIONS.

Order RANUNCULACEÆ.

1. CLEMATIS, *p.* 7–11.

2. *C. ovata.*—We have a specimen from Tennessee (collected by Dr. Currey), which proves that this species is at least sometimes climbing, and the lower leaves compound: hence it should probably stand next to C. Viorna.

4. *C. Douglasii* (Hook.!)—Carpels villous, with long plumose tails; stem and peduncle strongly striate.—We have specimens in fruit from Douglas's last Oregon Collection.

5. *C. Virginiana.*—The syn. C. Catesbyana, *Pursh*, must be excluded. The leaves are trifoliolate, or rarely pinnately 5-foliolate. — *Virgin's-bower.*

6 (*a*). *C. Catesbyana* (Pursh): minutely pubescent; panicles divaricate-dichotomous; the flowers mostly diœcious (small); leaves biternate or pinnately 5-foliolate; leaflets ovate, often slightly cordate, 3-nerved at the base, mostly 3-lobed; the lobes entire; sepals linear-oblong; carpels with rather short plumose tails.—*Pursh! fl.* 2. *p.* 736; *DC.! prodr.* 1. *p.* 4. C. Plukenetii, *DC. l. c. p.* 7?

S. Carolina, *Catesby!* (v. sp. in *herb. Lamb.*) Georgia, *Le Conte!*—The leaflets are smaller than in the preceding, acute or acuminate, and often narrow; the pedicels tomentose-pubescent, &c. It is perhaps too near C. dioica, *Linn.*—The very poor specimen (in *herb. Banks.!*) on which C. Plukenetii was founded, seems to belong to this species.

7. *C. holosericea* (Pursh!) is very different from C. Virginiana, and nearly related to our C. Drummondii (which sometimes bears entire leaflets), and perhaps not specifically distinct from it. (v. sp. in *herb. Lamb.*)

10. *C. pauciflora* is, by an error of the press, printed *C. parviflora.*

11. *C. lasiantha.*—California, *Douglas!*

13. *C. cylindrica.*—Carpels silky-villous when young, but not plumose, at length only pubescent.—Add syn. C. crispa, *Ell.! sk.* 2. *p.* 49, which

must be erased under C. crispa. — *β. Walteri.* C. Walteri, *Pursh!* (v. sp. in *herb. Walt.*)

15. *C. reticulata* (Walt. !) The specimen in Walter's herbarium, which is clearly the plant described by himself and Pursh, is labelled '*C. crispa.*'

2. ANEMONE, *p.* 11–14.

10. *A. Virginiana* (Linn. !) Flowers from June–August.

11. *A. multifida* (DC. !) consists of the original A. multifida, *Poir.! suppl.*, which is founded entirely on a plant collected at the Straits of Magellan by Commerson (v. sp. in *herb. mus. Par.*); and of the *β. Hudsoniana* (A. multifida, *herb. Banks!* A. sanguinea, *Pursh!*), a North American plant; which is doubtless a different species, (as we had already suggested) with flowers only half the size; the sepals red (not ochroleucous) &c. Our plant must consequently bear the name of *A. Hudsoniana*, Richardson.

5. RANUNCULUS, *p.* 15–25.

1. *R. aquatilis.*—To this must be added:
ε. brachypus: leaves all filiformly dissected; peduncles shorter than the leaves.—*Hook. & Arn.! bot. Beechey, suppl. p.* 316.—California, *Douglas!*

2. *R. glacialis.*—Collected in Greenland by *Capt. Scoresby!* (v. sp. in *herb. Hook.*)

13. *R. cardiophyllus* (Hook.)—Add syn. *Bot. mag. t.* 2999.

15. *R. glaberrimus* (Hook. !)—In the 'Snake Country,' along Snake or Lewis River, *Mr. Tolmie!*

28. *R. repens.*—To this several described species must be referred. R. tomentosus *DC.* (as to spec. in *herb. Lamb.!* R. lanuginosus, var. *Pursh!*) and R. Carolinianus, *DC.!* (as to the specimen accompanying R. lanuginosus, *Pursh*, in *herb. Lamb.* and probably entirely, although we have not seen Bosc's plant) are vernal states of our R. repens, resembling those we frequently meet with in rather dry and sterile soil. R. Belvisii, *DC.!* is a larger state of the same species, nearly the same as R. nitidus, *Muhl.* and *Ell.!* R. hispidus, *Michx.!* (and of this work, excluding the appended remark respecting the leaves) is the same with the R. Marilandicus, *Poir.!* (fide spec. in *Mus. Par.*), our own R. repens *γ.* To this also belongs R. Philonotis, *Pursh!*—Among the very numerous European forms of R. repens in Prof. Schlechtendal's herbarium, we recognized most of the American varieties which we have referred to that species.

29. *R. hispidus* (Michx.) must accordingly be referred to R. repens *γ.* (which should bear this name instead of *Marilandicus.*)

30. *R. occidentalis.*—Add syn. R. recurvatus *β.* Nelsonii, *DC.! syst.* 1. *p.* 290. (v. sp. in *herb. Banks.*); which must be erased from no. 32. R. recurvatus, *p.* 23.

33. *R. Carolinianus.*—The plant we have described under this name is not the R. Carolinianus of De Candolle. (Vid. remarks under R. repens.) It is apparently the R. palmatus, *Ell.* which name must be substituted, and all the other synonymy excluded.—The species should stand next to R. repens, with which it has many points of resemblance.

34. *R. tomentosus*, must be referred to R. repens. (Vid. note upon that species.)

37. *R. Schlechtendalii* (Hook.!) appears to differ chiefly from R. nivalis in wanting the black hairs on the calyx.

38 (*a*). *R. delphinifolius?* (H. B. & K.): stem erect, nearly glabrous, branched; radical and lower leaves on very long petioles, 2–3-pinnately divided, [scarcely] hirsute; the uppermost less divided and sessile; the segments linear-lanceolate, acute, decurrent at the base; the sheathing base of the petiole elongated, sulcate, very hispid; flowers somewhat panicled; calyx reflexed, very hispid; petals 11–14, obovate-oblong; ovaries with a short recurved style. *Hook. & Arn.*—R. dissectus, *Hook. & Arn.! bot. Beechey, suppl. p.* 316, not of *Bieberst.* R. delphinifolius, *H. B. & K. nov. gen. & spec.* 5. *p.* 48*?* R. dichotomus, "*Moçino & Sesse, pl. Mex. ined;*" *DC. prodr.* 1. *p.* 39*?*

California, *Douglas!*—We have copied the character given by Hooker & Arnott; but are obliged to change the name, as there is a prior R. dissectus; and, as we strongly suspect that it is the same with both the R. delphinifolius of Humboldt and Bonpland, and the R. dichotomus of Moçino and Sesse, we have refrained from introducing a new specific name.

41. *R. parviflorus.*—To var. γ. add syn. R. hebecarpus, *Hook. & Arn.! bot. Beechey, suppl. p.* 316.—The Californian plant is certainly the same with that of the United States, R. trachyspermus, *Ell.;* which name must be adopted should the plant prove to be different from R. parviflorus. To it doubtless belongs the var. acutilobus, *DC.*

9. TROLLIUS, *p.* 27.

1. *T. laxus.*—Add syn. *Bot. mag. t.* 1988.

9 (*a*). HELLEBORUS. *Adans.; DC. prodr.* 1. *p.* 46; *Endl. gen. p.* 848.

Sepals 5, persistent, mostly greenish. Petals 8–10, very short, tubular, 2-lipped. Stamens numerous. Stigmas orbicular. Follicles 3–10, slightly cohering at the base, coriaceous, many-seeded. Seeds elliptical, fungous at the hilum.—Perennial herbs (natives of Europe and Asia). Leaves coriaceous; the radical ones palmately or pedately divided. Flowers large, nodding.—*Hellebore.*

1. *H. viridis* (Linn.): radical leaves glabrous, pedately divided; the cauline few, nearly sessile, palmately parted; peduncles often geminate; sepals roundish-ovate, green. *DC.*—*Jacq. fl. Austr. t.* 106; *Engl. bot. t.* 200; *Schk. handb. t.* 154; *Muhl. cat. ed.* 2. *p.* 56.

'New York,' *Muhlenberg.* In an old field near Brooklyn, Long Island, and on the plains near Jamaica, Long Island, New York; abundant, *Mr. Halsey! Mr. Browne!* April.—Doubtless introduced, but fully naturalized. —*Green Hellebore.*

11. ENEMION (*Raf.*) *p.* 29.

The generic and specific character must be cancelled, and the following inserted in its place.

11. ISOPYRUM *Linn. hort. Ups., & gen. no.* 701; *Gærtn. fr. t.* 65; *Schk. handb. t.* 153.

Sepals 5, petaloid, deciduous. Petals 5, small, tubular or conchiform, sometimes wanting. Stamens 10–40. Ovaries 3–20: ovules few or numerous: stigmas lateral. Follicles ovate or oblong, 2–several-seeded, sessile or slightly stipitate, acuminate with the style. Seeds smooth or granulated.—Annual or perennial slender herbs, with 2–3-ternately divided membranaceous leaves; the segments 2–3-lobed. Flowers axillary and terminal, rather small, white, on slender petioles.

§ *Petals none.*—Enemion, Raf.

1. *I. biternatum:* petioles auricled at the base; carpels 3–6, broadly ovate, divaricate, sessile, strongly nerved with 3–4 oblique veins on each side, 2-seeded; seeds obovate, compressed, with a conspicuous cord-like raphe, and a smooth and shining (very minutely pubescent) testa.—I. thalictroides, (var.) *Short! cat. pl. Kentucky,* 1. *p.* 8; *Hook.! in jour. bot. p.* 187, (note). Enemion biternatum, *Raf.! in jour. phys.* (1820) 2. *p.* 70.

Add to the localities already cited; Middle Florida, *Dr. Chapman!*—This is certainly a distinct species, and not an apetalous state of I. thalictroides, the young fruit of which we have at length been able to examine: but the structure of the seed in that species is nearly similar to ours, except that the raphe is not prominent, and the ovules vary from 4–6 in number.—The following species accords with the Enemion of Rafinesque in wanting the petals; while in the form of the carpels, the number of the seeds, and the granulate testa, it approaches the original Isopyrum (Leptopyrum, *Reichenb.*), I. fumarioides, *Linn.*

2. *I. occidentale* (Hook. & Arn.): petioles slightly dilated at the base; carpels 6–7, oblong, sessile, at length spreading, marked with numerous transverse veins, 8–9-seeded; seeds oval, gibbous, with a minutely granulated testa.—*Hook. & Arn.! bot. Beechey, suppl. p.* 316.

California, *Douglas!*—Root unknown. Flowers smaller than in the preceding species.

12. AQUILEGIA, *p.* 12.

1. *A. Canadensis.*—On limestone cliffs, Florida, *Dr. Chapman!*—Stem a little pubescent, as is often the case in the Northern States.

2. *A. cærulea.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 317, *t.* 72. (A. macrantha in the plate.)—Flowers very large.

13. DELPHINIUM, *p.* 30–33.

3. *D. Californicum.*—Add syn. D. exaltatum, *Hook. & Arn.! bot. Beechey, suppl. p.* 317.

5. *D. Menziesii.*—Our plant (the D. simplex, *Hook.!*) is not the D. Menziesii of De Candolle or Hooker, which is the same with D. pauciflorum, *Nutt.* Of the present plant we have numerous forms which we cannot distinguish from D. azureum. Our description should therefore be cancelled.

6. *D. azureum.*—To var. γ. add syn. D. Menziesii β. ochroleucum, *Nutt.*—The other forms of D. simplex (our D. Menziesii, p. 31), of which

additional ones are noticed in the Supplement to Beechey's Voyage, should also be arranged among the varieties of this species. The D. simplex *β.* calcare calycem subæquante, *Hook. & Arn. l. c.* appears like a different species, but our specimens are very imperfect. Add to the locality Oregon! and California!

9. *D. variegatum.*—Add. syn. D. grandiflorum *β.* variegatum, *Hook. & Arn. l. c.*—It appears to us different from the Siberian D. grandiflorum. Lower petals either 3-lobed or entire, sometimes variegated, sometimes all blue.

11. *D. pauciflorum* (Nutt.)—This is a somewhat depauperate form of D. Menziesii, *DC.* (not no. 5, of this work.) In its place the following should be inserted.

11. *D. Menziesii* (DC.): pubescent; petioles scarcely dilated at the base; leaves 5-parted; the divisions 2–3-cleft; lobes mostly linear, entire; lower bracts 3-cleft; raceme 3–6-flowered; spur straight, as long as the sepals; ovaries somewhat tomentose; root grumous.—*DC.! syst.* 1. *p.* 355, (fide sp. in *herb. Banks.*); *Hook.! fl. Bor.-Am.* 1. *p.* 25, *& in bot. Beechey, suppl. p.* 317; *Lindl. bot. reg. t.* 1192. D. pauciflorum, *Nutt.!* (a smaller form.)

In pine woods, from Kotzebue's Sound to Oregon, *Douglas! Mr. Tolmie! Nuttall!* California, *Douglas, Mr. Tolmie!* and the Rocky Mountains, *Nuttall!*—Stem 6 inches to a foot or more high. Pedicels elongated. Flowers large, violet-blue, the upper petals whitish.—Allied to D. bicolor.

12 (*a*). *D. decorum* (Fisch. & Meyer): pubescent or rather glabrous; leaves 3-parted; the lateral divisions 2-cleft or undivided; lobes oblong, 3-toothed or entire; bracts and floral leaves somewhat oblong, mostly entire; spur curved, as long as the sepals. *Fisch. & Meyer, 3rd ind. sem. St. Petersb.* (1837), *& in Linnæa, suppl.* 12. *p.* 92.

California, at the Russian colony Ross.—Resembles D. Menziesii and D. elegans, but the leaves are quite different. Flowers showy, violet-blue turning to violet-purple. *Fisch. & Meyer.*

13. *D. nudicaule.*—Add syn. D. sarcophyllum, *Hook. & Arn.! bot. Beechey, suppl. p.* 317.—There are two states of this in Douglas's collection; one with a simple stem or scape, the leaves all nearly radical, and the flowers in a pyramidal raceme, the lower pedicels very long, &c. We were acquainted with this form only when our description was published. We have now the other form (from which the character of D. sarcophyllum, *Hook. & Arn.* is drawn; the stem is more or less branched, and there is a small leaf at the base of each branch, and the raceme thus becomes paniculate. Still the name of D. nudicaule is not inappropriate to this form. We had neglected to notice the singularly fleshy leaves. The species is in every respect a remarkable one.

20. HYDRASTIS, *p.* 40.

H. Canadensis.—To the synonymy add *Hook.! bot. mag. t.* 3019, *& t.* 3232 (fruit).

21. PÆONIA, *p.* 41.

1. *P. Brownii.*—Add syn. *Lindl. bot. reg.* (*ser.* 2) *t.* 30.—Our two species "form a section of Pæonia (§ Onæpia, *Lindl.*) characterized by short leathery petals, a lobed fleshy disk, and a dry, not succulent, seed-coat." *Lindl. l. c.*

17. TRAUTVETTERIA, *p.* 37.

1. *T. palmata.*—Thalictrum ranunculinum, *Muhl.!* fide sp. in *herb. Willd.*—Thalictrum rotundifolium, *Wall. pl. Asiat. rar. t.* 264, is perhaps a species of this genus.

ORDER MAGNOLIACEÆ.

1. ILLICIUM, *p.* 42.

2. *I. parviflorum.*—Add syn. *Vent. hort. Cels. t.* 22.

2. MAGNOLIA, *p.* 42.

1. *M. grandiflora.*—Add syn. *Bot. mag. t.* 1952.

3. *M. Umbrella.*—Add syn. M. tripetala, *Guimp. Otto, & Hayne, holz. t.* 18.

4. *M. acuminata.*—Add syn. *Guimp. Otto, &. Hayne. l. c. t.* 17.—"Fruit 6–8 inches long." *Dr. Sartwell.*

6. *M. Fraseri β. pyramidata.*—Add syn. M. pyramidata, *Bot. reg. t.* 407.

7. *M. macrophylla.*—Add syn. *Hook. bot. mag. t.* 2189.

3. LIRIODENDRON, *p.* 44.

L. tulipifera.—Add syn. *Bot. mag. t.* 275 ; *Guimp. Otto, & Hayne, holz. t.* 29.

ORDER SCHIZANDRACEÆ.

1. SCHIZANDRA, *p.* 46.—To the gen. char. add :

Carpels baccate, 1–2-seeded. Seeds lateral, reniform, compressed: testa crustaceous and brittle. Embryo very minute, at the base of the homogeneous whitish fleshy albumen.

S. coccinea.—Add syn. *Bart. fl. N. Amer. t.* 13.—From Dr. Hale, of Western Lousiana, we have received fine specimens of this interesting plant both in flower and fruit.

ORDER BERBERIDACEÆ.

There are specimens of a singular Berberis with palmately compound leaves in Drummond's Texan Collection, but without flowers or fruit.

7. PODOPHYLLUM, *p.* 54.

There is a hexandrous species of Podophyllum, a native of the mountains of Nepaul. (P. hexandrum, *Royle, illustr. pl. Himal.; Camb. voy. Jacquemont ! t.* . . P. Emodi, *Wall.*) Hence the character of the genus must be modified accordingly, and a diagnostic character inserted for our species :

1. *P. peltatum* (Linn.): stamens 12–18; leaves 5–7-parted; the segments cuneiform-oblong, somewhat lobed or toothed at the apex.

8. CROOMIA. *Torr. in ann. lyc. New York*, 4. *p*. . , *t*. 7. (ined.)

Sepals 4, broadly oval, somewhat coriaceous, persistent. Petals none. Stamens 4, opposite the sepals: filaments thick: anthers oblong, obliquely introrse, immovable; the cells somewhat separate, opening longitudinally their whole length. Ovary globose-ovate, with 4–6 suspended ovules: stigma sessile, capitate, minute. Fruit dry and indehiscent? coriaceous, ovate, compressed, attenuate into an obtuse beak. Seeds 1–2, suspended from the summit of the cell, nearly covered with a copious fimbriated arillus; the testa crustaceous, rugose longitudinally.—A perennial herb, with a horizontal branching rhizoma (like that of Leontice thalictroides), throwing up several short simple stems, with membranous sheaths at the base. Leaves oblong-ovate, cordate at the base, membranaceous, entire, approximate or crowded at the summit of the stem, 5–9-ribbed; the ribs convergent to the apex; the veinlets reticulated. Peduncles axillary, 2–3-flowered: pedicels filiform, articulated in the middle. Flowers small, greenish-white and purplish.

C. pauciflora (Torr.! l. c.)—Cissampelos pauciflora, *Nutt.! in jour. acad. Philad.* 7. *p*. 115. Anonymos discoroides, *Croom.! in Sill. jour.* 28. *p*. 165. 6/

Aspalaga, Middle Florida, on the Apalachicola River, under the shade of Torreya taxifolia, *Mr. Croom! Dr. Chapman!* April.—Root of thick fibres from a slender yellowish rhizoma. Stem erect, slender, 8–12 inches high: the whole plant glabrous. Leaves alternate, but usually approximated so as to appear verticillate: petiole about an inch long; the lamina 2–4 inches, acute, with the venation of Dioscorea or Smilax. Peduncles recurved, about the length of the petioles: pedicels 2–3, or sometimes solitary. Flowers about 2 lines in diameter. Sepals concave, rather obtuse, persistent until the fruit is ripe, purplish towards the base, obscurely 3–5-nerved, imbricated. Filaments about half the length of the sepals, semiterete, purplish: anthers yellow, inserted by a broad base on the summit of the filament, somewhat between innate and adnate, the face directed upwards and inwardly. Ovary simple, marked with a slight sutural groove on each side opposite the exterior sepals, with 6–8 anatropous ovules suspended from the summit of the cell: stigma a glandular entire protuberance. Fruit about one-third of an inch long, compressed laterally, with an abrupt curved beak; the ventral suture marked with a deep groove, which extends to the summit of the beak. Seeds ovoid: raphe and chalaza evident: arillus large, divided into innumerable terete processes, which envelope the seed. Embryo very minute, at the base of copious fleshy albumen.—We consider this plant as a reduced form of Berberidaceæ: it is however remarkable for its persistent sepals, suspended seeds, and in being apetalous. Nandina agrees with it in the dehiscence of the anthers. It would be impossible to determine from the habit of the plant whether it were dicotyledonous or monocotyledonous; and the embryo is so minute that the cotyledons cannot be distinguished; but the structure of the rhizoma is exogenous, a circle of spiral vessels surrounding the central pith.—The genus was established several years since, in a paper read before the Lyceum of Natural History, New York; and named in honor, now alas! in memory, of its discoverer, the late Henry B. Croom, Esq., author of a monograph of Sarracenia, and of other papers on the plants of Florida and the Southern States.

S. Alabama, [illegible]

Jm, Neisler, ex Torr.

ORDER NELUMBIACEÆ.

NELUMBIUM, *p.* 56.

1. *N. luteum.*—Add. syn. *Hook. bot. mag. t.* 3753. Cyamus luteus, *Bart. fl. N. Amer. t.* 63.—The plant is not found at Haddam, Connecticut, according to Prof. Tully; but at Lyme (Seldon's Cove) 10 miles below Haddam. It is also found at Swedesborough Creek in New Jersey, 40 miles below Philadelphia.

ORDER SARRACENIACEÆ.

Mr. Bentham has recently described a new genus of this order (Heliamphora, *Benth.*), founded on a plant discovered by Mr. Schomburgk in Guiana, at an elevation of 6,000 feet. It differs from Sarracenia chiefly in wanting the petals and the dilated stigma, in the smaller number of cells to the ovary, and in bearing several flowers on the scape.

ORDER PAPAVERACEÆ.

7. CHRYSEIS, *p.* 63. (Eschscholzia, *Cham.*)

We are informed by several distinguished German botanists that the ***Elscholtz*** to whom the genus Elscholtzia was dedicated by Willdenow, and ***Eschscholtz***, the companion of Chamisso, were not father and son, nor of the same family or name. If this be the case, it becomes a question whether the similarity between ***Elscholtzia*** and ***Eschscholtzia*** is so great as to justify the change proposed by Dr. Lindley, and which we have adopted.

In the Supplement to the Botany of Capt. Beechey's Voyage, as well as in a previous letter to us, Hooker & Arnott have shown that the original Eschscholtzia Californica of Chamisso is the E. crocea of Bentham and other authors. This is evident as well from the figure published by Chamisso, which represents the dilated limb of the torus, as from the fact that this species is found in California; while the E. Californica of English botanists (the plant introduced by Douglas) is a native of Oregon exclusively. This view we were last summer enabled to verify by an examination of Chamisso's original specimen. If then the two species are really distinct (and we think that the dilated torus will distinguish the Californian plant) it becomes absolutely necessary to transfer the name '*Californica*' to Chamisso's plant. This Hooker and Arnott have done, proposing also to distinguish the Oregon plant by the name of Chryseis (Eschscholtzia) Douglasii. Adopting this view, the synonymy of the two species will stand thus:

1. *C.* (*Eschscholtzia*) *Douglasii* (Hook. & Arn. l. c.) (Add the character under our C. Californica)—Chryseis Californica, *Lindl.*, *and of this work*, *p.* 63; not of *Hook. & Arn.* Eschscholtzia Californica, *Lindl.! bot. reg. t.* 1168; *Hook.! bot. mag. t.* 2887, *& fl. Bor.-Am.* 1. *p.* 34.—Oregon! (not California.)

2. *C.* (*Eschscholtzia*) *Californica* (Hook. & Arn.) (Character under C. crocea, p. 63.)—Chryseis crocea, *Lindl.! bot. reg. under t.* 1948. C. compacta, *Lindl.! bot. reg. t.* 1948. Eschscholzia Californica, *Cham.! & Nees, horæ phys. Berol. & Bonn, p.* 73, *t.* 15; *Cham. & Schlecht.! in Linnæa,* 1. *p.* 554; not of *Lindl., Hook. &c.* E. crocea, *Benth.! in hort. trans.* (*ser.* 2) 1. *p.* 407; *Lindl.! bot. reg. t.* 1677; *Brit. fl. gard.* (*ser.* 2) *t.* 299—California, *Chamisso! Menzies! Douglas!* &c.

11. PLATYSTEMON, *p.* 65.

P. Californicum γ. *leiocarpum.*—Add syn. *Hook. bot. mag. t.* 3750.

Order FUMARIACEÆ.

1. DIELYTRA, *p.* 66. (Diclytra, [Dicentra?] *Borkh.* Vid. *Bernh. in Linnæa,* 8. *p.* 401.)

2. *D. Canadensis.*—Add syn. *Hook.! bot. mag. t.* 3030.

3 & 4. *D. formosa* & *D. saccata.*—We were mistaken in supposing both the Fumaria formosa and F. eximia to be founded on the plant of the United States. The former was established by Dryander upon specimens brought from Oregon by Mr. Menzies. The name and synonymy of these two species must stand thus:

3. *D. eximia* (DC.)—Fumaria eximia, *Ker, bot. reg. t.* 50. Corydalis formosa, *Pursh! fl.* 2. *p.* 462 (excl. Canad. var.), not Fumaria formosa, *Dryand.* Dielytra formosa, *Ell. sk.* 2. *p.* 177; *Thomas, in Sill. jour. l. c.*, and of this work, excluding the remaining synonymy.—We have recently received specimens from the Peaks of Otter, Virginia, collected by Mr. Buckley. Also from Yates County, New York, where it was discovered by Dr. Sartwell. It was originally found in Georgia by Lyon, (fide *Bot. reg.*)

4. *D. formosa* (DC. l. c.)—Fumaria formosa, *Dryand.! in hort. Kew. (ed.* 2) 4. *p.* 239; *Andr. bot. rep. t.* 393; *Bot. mag. t.* 1335. Dielytra saccata, *Nutt.* in this work.—On p. 68 (under this species), instead of 'D. formosa,' read D. eximia.

5. *D. lachenaliæfolia* (DC.!) is very different from the preceding species. (v. sp. *Pall.* in *herb. Willd.*)—Next to this species add:

6. *D. chrysantha* (Hook. & Arn.): stem tall, leafy, branching; leaves 2–3-pinnately divided, glaucous; the segments linear, acute; panicle elongated; bracts and sepals broadly ovate, obtuse; petals spatulate; the two exterior scarcely gibbous at the base; the inner broadly winged on the back for nearly their whole length; stigma very broad, truncate. *Hook & Arn.! bot. Beechey, suppl. p.* 320, *t.* 73. (v. sp. in *herb. Hook.*)
California [*Douglas!* or in the interior?] Stem 2–3 feet high, erect. Flowers large and showy, golden yellow.

3. CORYDALIS, *p.* 69.

1. *C. aurea* (Willd.!)—Add the following:

β.? crystallina: pods oval or cylindrical, covered with pellucid vesicles.—C. crystallina, *Engelmann! mss.*—Arkansas, *Nuttall! Dr. Engelmann!* (in rich prairies.) The pods appear as if they were hispid or pubescent when dry. It is probably a distinct species.

3. *C. Scouleri* (Hook.!)—Excl. syn. C. pæoniæfolia, *Pers. &c.* (fide spec. *Pall.* in *herb. Willd.*)

4. *C. macrophylla* (Nutt.) is wholly C. Scouleri.

ORDER CRUCIFERÆ.

1. CHEIRANTHUS, *p.* 71.

1. *C. capitatus* Dougl.! (C. asper, *Cham. & Schlecht.!* fide sp. in *herb. Berol.*) is the same plant with our Erysimum grandiflorum, *Nutt.*, in which the radicle is certainly incumbent!

2. *C.? Pallasii* (Pursh!)—A comparison of the specimen in Mr. Lambert's herbarium, with Hooker's figure of Hesperis pygmæa, enables us to confirm the correctness of his suggestion. The two plants are certainly identical. The specimen is not in fruit; hence De Candolle's character '*siliqua teretiuscula*,' which seemed to forbid their union, was taken from the appearance of the ovary. It must bear the name of *Hesperis Pallasii*, which has the priority: there is besides another H. pygmæa.

2. NASTURTIUM, *p.* 72–75.

1. *N. officinale.*—Tampa Bay, Florida, *Dr. Leavenworth!* Probably indigenous. Naturalized in many places.

2. *N. tanacetifolium.*—Add syn. N. micropetalum, *Fisch. & Meyer, ind. sem. St. Petersb.* (3) 1837.

3. *N. lyratum.*—Oregon, *Douglas!* Probably too near N. curvisiliqua; but the leaves are rather different, and the pedicels shorter.

4. *N. sessiliflorum.*—Radical leaves pinnatifid; the lobes somewhat toothed. —Banks of the Ohio, &c. Indiana, *Dr. Clapp!*

5. *N. sinuatum.*—Add β. style almost none.—Oregon, *Mr. Tolmie!* Near N. curvisiliqua, but has larger flowers, longer pedicels, &c.

4. STREPTANTHUS, *p.* 75–77.

3. *S. sagittatus.*—Instead of 'petals oblong-ovate,' insert, petals cuneate-oblong.

4. *S. angustifolius.*—Add syn. S. sagittatus, *Hook. & Arn.! bot. Beechey, suppl. p.* 322, not of *Nutt.*—Snake Country (Lewis River), *Mr. Tolmie!* The specimens are rather larger and more branched than Mr. Nuttall's, and the lower leaves larger; but there is no other difference.

10. *S. heterophyllus* (Nutt.)—Siliques refracted, straight.—It should stand next to S. glandulosus.

5. TURRITIS, *p.* 78.

1. *T. glabra β.?* (as well as our plant from the Shore of Lake Superior) is the same with T. stricta, *Hook.* or very nearly so.—The following species is to be added at the end of the genus.

10. *T.? lasiophylla* (Hook. & Arn.): stem simple, elongated, strict, hispid below with simple rigid hairs, nearly glabrous above; leaves oblong-lanceolate, pinnatifid, petioled; the uppermost linear, entire, attenuate at the base; calyx rather hairy; petals linear (yellow), unguiculate; siliques long, narrowly linear, straight, strongly deflexed. *Hook. & Arn. bot. Beechey, suppl. p.* 320.

California, *Douglas.*—Plant 1–2 feet high. Petals about half as long again as the calyx. *Hook. & Arn.*

6. ARABIS, *p.* 79–83.

1 (*a*). *A. blepharophylla* (Hook. & Arn.): perennial; leaves naked, except the margins, which are ciliate with very rigid simple or forked white hairs; the radical ones obovate-spatulate, the cauline oblong and sessile; sepals elliptical, obtuse, pubescent above with stellate hairs; petals (purple) obovate, with slender claws. *Hook. & Arn.! bot. Beechey, suppl. p.* 321.

California, *Douglas!* [probably from the interior.]—Stem 3–4 inches high. Calyx half the length of the petals.—A very distinct species.

14. *A. lævigata β. laciniata.*—Kentucky, *Dr. Peter! Dr. Short!*

7. CARDAMINE, *p.* 83–86.

1. *C. rhomboidea γ.*—Louisiana, *Prof. Carpenter!*

4. *C. purpurea* (Cham. & Schlecht.!)—We have this fine species from Douglas's collection, (communicated by Mr. Bentham) probably from the interior of Oregon, but the locality is not recorded. The leaflets of the radical leaves are all obtuse, as indeed they are described by Chamisso and Schlechtendal, but some of them are acute at the base.

10. PHŒNICAULIS, *p.* 89.

P. cheiranthoides.—Add syn. Hesperis Menziesii, *Hook. fl. Bor.-Am.* 1. *p.* 60, *& bot. Beechey, suppl. p.* 322, *t.* 75. California, *Menzies!* Pine Creek, in the Snake Country, *Mr. Tolmie!*

12. HESPERIS, *p.* 90.

2. *H. minima* is Cheiranthus Pallasii, *Pursh!*, and must be called *H. Pallasii.*—(Vid. notes upon Cheiranthus.)

3. *H. Menziesii* is Phœnicaulis cheiranthoides, *Nutt.*

13. SISYMBRIUM, *p.* 91–93.

3. *S. linifolium.*—Add syn. Erysimum? glaberrimum, *Hook. & Arn.! bot. Beechey, suppl. p.* 323. (Snake Country, *Mr. Tolmie.*) Flowers pale yellow.

4. *S. pygmæum* (Nutt.) is only a dwarf form of the preceding.

8. *S. humile.*—Add syn. *Ledeb. ic. pl. Ross.-Alt. t.* 147.

15. ERYSIMUM, *p.* 94.

3. *E. asperum*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 323. E. elatum, *Nutt. no.* 5. (certe.)—Interior of California, *Douglas! Mr. Tolmie!*

4. *E. Arkansanum.*—Rocky banks of the Scioto, near Columbus, Ohio, *Mr. Sullivant!*

8. *E. grandiflorum.*—Add syn. Cheiranthus asper, *Cham. & Schlecht.!*

in Linnæa, 1. *p.* 14, (excl. syn.) C. capitatus, *Dougl.! in Hook. fl. Bor.-Am. f. p.* 38. (Vid. notes upon Cheiranthus.)

16. PACHYPODIUM. (Thelypodium, *Endl. gen. p.* 876.)

There is an earlier Pachypodium, by Webb & Berthelot, founded on Sisymbrium Columnæ, S. Pannonicum, &c.; but we suspect it is not sufficiently distinct from Sisymbrium.

2. *P. integrifolium.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 321, *t.* 74. (Blackfoot River, *Mr. Tolmie.!*)

21. VESICARIA, *p.* 100–102.

2. *V. Ludoviciana.*—Add syn. V. globosa, *Desv. jour. bot.* 3. *p.* 181 & 184, fide *Arnott.*

3. *V. grandiflora.*—To this species belongs V. brevistyla, no. 7. Our *β. pallida*, and the remarks that relate to it, should be excluded: it is a distinct species, which may be called *V. pallida.* We were misled by the figure in *Brit. fl. gard.*, which represents the style too long.

8. *V. gracilis.*—Add syn. *Hook.! bot. mag. t.* 3533.

23. DRABA, *p.* 103–109.

17. *D.? lævigata* (Cham. & Schlecht.!) is Eutrema Edwardsii, *R. Br.*

19. *D. arabisans.*—Add syn. D. Henneana, *Schlecht.! in Linnæa*, 10. *p.* 100. (Labrador) D. glabella, *Pursh! fl.* 2. *p.* 434 (a dwarf form), fide spec. in *herb. Banks.* The D. glabella of Hooker (fide spec.) appears to belong to D. incana.

28. EUTREMA, *p.* 112.

E. Edwardsii.—Add syn. *Ledeb. ic. pl. Ross.-Alt. t.* 255. Draba? lævigata, *Cham. & Schlecht! in Linnæa*, 1. *p.* 25. (Island of St. Lawrence.)

30. PLATYSPERMUM, *p.* 112.

From Douglas's last Oregon collection, made in the interior, we have beautiful specimens of *Platyspermum scapigerum* (kindly communicated both by Sir Wm. Hooker and Mr. Bentham), with mature fruit. In this state, the silicle is almost exactly orbicular; the seed with a very broad winged margin, and the cotyledons accumbent! The genus must therefore be removed to the Tribe Alyssineæ.

36. LEPIDIUM, *p.* 114.

2. *L. Virginicum.*—Add syn. Cynocardamum Virginicum, *Webb & Berthelot, hist. nat. Canar.*

7. *L. nitidum.*—Add syn. L. leiocarpum, *Hook. & Arn.! bot. Beechey, suppl. p.* 324. (not of *DC.*)

8. *L. oxycarpum.*—Add syn. *Hook. & Arn.! bot. Beechey, p.* 323.—Racemes loose: pedicels somewhat flattened.

11. *L. montanum* (Nutt.)—Add to the character: Stems much branched above; flowers and fruit densely corymbose; silicles ovate (biennial).

β. stem erect, much branched above; flowers very numerous (biennial). —L. corymbosum, *Hook. & Arn.! bot. Beechey, suppl. l. c.* (Snake River, *Mr. Tolmie!*)—This and Mr. Nuttall's plant are different states of the same species.

38. HYMENOLOBUS, *p.* 117.

1. *H. divaricatus.*—Add syn. *Hook.! ic. pl. t.* 277.

ORDER CAPPARIDACEÆ.

4. POLANISIA, *p.* 122.

1. *P. graveolens.*—To the spec. char. add: Sepals longer than the claws of the petals; stamens mostly rather longer than the petals; seeds flattish, smooth and even.—Add syn. *Deless. ic.* 3. *t.* 4. Cleome violacea, *Gærtn. fr. t.* 76 (excl. syn.); *Lam. ill. t.* 507, *f.* 2, ex *DC. in Deless. l. c.*

1 (*a*). *P. trachysperma:* viscidly pubescent; leaves 3-foliolate; leaflets lanceolate-oblong, tapering at the base, shorter than the petiole; sepals lanceolate, attenuate-acuminate, shorter than the capillary claws of the emarginate petals; stamens usually 16; the filaments (deep purple) twice or thrice the length of the petals; style about the length of the glabrous ovary; pods linear-oblong, turgid, abruptly attenuate at the base, reticulated, glandular-scabrous; seeds turgid, verrucose-muricate.

Texas, *Drummond!*—An interesting species belonging to the same section (Eupolanisia) with P. graveolens and P. uniglandulosa, and in many respects intermediate between the two. The petals are larger and more showy than in the former (and like that species cuneate-obcordate), but smaller than in the latter and of a different shape. Besides the characters given above, the pods are usually larger than in P. graveolens; the nectary is cyathiform, but compressed, with a thin margin; and the filaments and seeds are very different; yet it is perhaps the P. graveolens which is said to grow in Mexico. We have not seen the seeds or pods of C. uniglandulosa; but the flowers are quite different from this species.

ORDER RESEDACEÆ.

1. ELLIMIA, *p.* 125. (Oligomeris, *Camb.! pl. Jacquemont.*—Resedella, *Webb & Berthelot! hist. nat. Canar.*)

This plant has recently been published under three different names, from as many collections made in widely different parts of the world, viz: in the interior of India, where it was collected by Jacquemont; in the Canary Islands, by Webb & Berthelot; and in California, by Nuttall. It was previously collected in Egypt by Delile, and is his *Reseda subulata* (fide sp. in *herb. Delile*, &c.) Mr. Nuttall assures us that it is an indigenous plant in California, but we incline to think it may have been introduced from the Canary Islands. For our information respecting the synonymy, we are originally indebted to Mr. Gay, and to Mr. Webb, who has given a figure in his and Berthelot's very interesting *Histoire Naturelle des Iles Canaries*, which we are unable to quote, as we do not possess the work and have mislaid our reference to it. The name given by Cambessèdes has the priority, and must be adopted.

ORDER POLYGALACEÆ.

1. POLYGALA, *p*. 126.

1. *P. sanguinea.*—This, the P. sanguinea of Nuttall, is not the plant of Linnæus. It is also the P. fastigiata, *Nutt.!* according to specimens in Hooker's herbarium, and therefore of *Hook. & Arn.! in jour. bot.* 1. *p*. 195; but not the P. fastigiata which Mr. Nuttall communicated to us, which is only a form of P. cruciata. It is not improbably the plant figured by Plukenet (*Mant. t.* 438, *f.* 5.) As a new name seems to be necessary, it may be called *P. Nuttallii.*

2. *P. purpurea.*—This is the original P. sanguinea, *Linn.!* (fide sp. Kalm in *herb. Linn.*) as well as of the earlier American authors. It is also P. viridescens, *Linn.! spec.* 2. *p*. 705 (a young state), excl. syn. *Gronov.!* which relates to P. lutea.

3. *P. cruciata*, Linn. (*pl. Gronov.!*)—Linnæus had never seen this plant, but founded the species on P. foliis quaternis, *Gronov.! fl. Virg.* (which is just P. cuspidata, *Hook. & Arn.!*), and P. quadrifolia seu cruciata, &c., *Pluk. alm. p*. 301. Of this last we could find no specimen in Plukenet's herbarium; but, as he states it to come from Virginia (Banister), it cannot be the exclusively northern form (Massachusetts) which Hooker (in *fl. Bor.-Am.* 1. *p*. 85.) takes for the true P. cruciata. The plant of the Southern States is the original species; but Hooker's plant cannot be separated, as we have numerous intermediate forms in which the point of the wings is nearly wanting.

5. *P. corymbosa.*—Having ascertained that Walter's P. cymosa is identical with this, his name must be adopted.

6. *P. acutifolia.*—We are now convinced that this plant is only a larger form of the preceding, with narrower leaves. It is also P. graminifolia, *Poir.!* (fide sp. in *herb. Mus. Par.*)

7. *P. cymosa.*—As Walter's name is transferred to P. corymbosa, that of Nuttall must be adopted for this species.—The synonymy of these species will therefore stand as follows:

P. cymosa, Walt.!—P. corymbosa, *Michx.!* (in part,) *Nutt.! DC. l. c.* P. ramosa, *Ell.!*
β. *graminifolia.*—P. graminifolia, *Poir.! DC.!* P. acutifolia, *Torr. & Gr.*

P. attenuata, Nutt.—P. corymbosa, *Ell.!* P. cymosa, *Torr. & Gr.* excl. syn. *Walt. & Poir.*

13. *P. bicolor.*—The plant described by Hooker & Arnott under this name is P. Boykinii, *Nutt.*, but not of Kunth, as we have ascertained by a careful comparison of authentic specimens. The exterior sepals in P. Boykinii are nearly equal, and destitute of the "2 thick parallel nerves" which are so conspicuous in P. bicolor; the wings also are broader, and the flowers do not turn orange when decaying, as in the latter species. It is much more nearly allied to P. asperuloides, *Kunth!* from which it chiefly differs in the denser spike, broader wings and white (not rose-colored) flowers.

21. *P. grandiflora.*—This is either the same with P. violacea of Aublet, or exceedingly near that species, as was obligingly pointed out to us by Mr. Bennett, who showed us a Brazilian specimen in the Banksian herbarium.

We have also seen Mexican specimens. Our species is called by the aborigines '*Clinclina*' (fide *Dr. Garden, mss. Soland.* in *herb. Banks.*) Mr. Brown has noticed that a Chilian species is figured in Feuillé under the native name of '*Clin-Clin.*'

β. angustifolia: leaves linear, somewhat glabrous.

Southern Florida, *Dr. Leavenworth!* Middle Florida, *Dr. Chapman.*—Leaves scarcely half a line in breadth, tapering to a sharp point. Flowers, &c. as in the more common form of the plant.

23. *P. Nutkana.*—Mr. Nuttall has recently sent us a brief description of a Polygala which he collected in California (P. Californica, *Nutt. mss.*), which is doubtless the P. Nutkana, judging from the character of De Candolle, and our recollection of Moçino's drawing in that author's possession. It is thus described by Mr. Nuttall: "Perennial, somewhat pubescent, decumbent; leaves elliptic-oblong, obtuse, approximate; racemes few-flowered; flowers greenish; crest none; calycine wings oblong, obtuse; the fertile flowers nearly all upon radical sarments, apetalous; capsules almost circular, flat; root bitter." *Nutt.*

24. *P. attenuata* (Hook. & Arn., *not of* Nutt.)—We have examined an authentic specimen of this species, and think it distinct from both P. sanguinea and P. ambigua, though much nearer the latter. The caruncle is as long as the seed. As the name is pre-occupied, the species may be called *P. Hookeri.*

2. KRAMERIA, *p.* 134.

For additional remarks upon the structure of the flower, vid. ***Bentham, pl. Hartweg. p.*** **13. Mr. Bentham justly considers the ovary as monocarpellary. Our *K. lanceolata* is not K. secundiflora, *DC.* (judging from an inspection of Moçino's drawing), as has been supposed; but to this last apparently belongs the K. Ixina, *Benth. l. c.* (not of *Linn.*)**

ORDER VIOLACEÆ.

1. NOISETTIA, *p.* 135.

1. *N. acuminata* (DC.) is apparently a state of Solea concolor, in fruit, with longer pedicels. (v. sp. in *herb. mus. Par.*)

2. VIOLA, *p.* 136–145.

9. *V. rotundifolia.*—Add syn. *Reichenb. ic. exot. t.* 124.

18. *V. rostrata.*—Add syn. *Reichenb. l. c. t.* 131.

29. *V. Canadensis.*—Add syn. *Brit. fl. gard.* (*ser.* 2) *t.* 62.

31. *V. chrysantha.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 325.—There is a prior V. chrysantha of Schrader (in *Reichenb. ic. exot. t.* 114.) but that is probably only V. calcarata or V. lutea.

ORDER HYPERICACEÆ.

1. ASCYRUM. *p.* 156.

When the first edition of the Species Plantarum was published, Linnæus seems to have had no specimens of this genus in his herbarium, and in consequence the

synonymy of his A. Crux-Andreæ and A. hypericoides was greatly confused. The name *Crux* (*Sancti*) *Andreæ*, commenced with Banister (*cat. stirp. Virg.*), which is referred to Hypericum pumilum sempervirens &c. *Pluk. mant. p.* 104:—the plant of Plukenet proves to be A. stans, *Michx.* (fide *herb. Pluk.!*) Here Linnæus obtained the name *Crux-Andreæ*, but he does not adduce that plant of Plukenet to his A. Crux-Andreæ, but establishes it wholly upon “Hypericoides ex terra Mariana, floribus exiguis luteis,' *Pluk. mant.;* which plant proves on inspection to be Hypericum mutilum! Linnæus founded his A. hypericoides upon A. foliis ovatis, *Hort. Cliff.* (of which no specimen is preserved in *herb. hort. Cliff.*) and of *Gronov. Virg.* (which is A. Crux-Andreæ of this work and of American authors); Hypericoides frutescens erecta &c. *Plumier, gen. p.* 51, (a West Indian plant); and to these is added, Hypericum pumilum sempervirens &c. *Pluk. l. c.* (which is A. stans, *Michx.* as we have stated above.) Thus far the first edition of the species Plantarum. In the second edition the character of A. Crux-Andreæ is changed, and the synonyms of *Hort. Cliff.* and *Gronov. Virg.* are transferred from A. hypericoides to this species; so that the A. Crux-Andreæ, *Linn. spec. ed.* 2, may be said to be our plant of that name, and should therefore doubtless be retained, notwithstanding the earlier confusion. The A. hypericoides is likewise modified, the syn. of Gronovius &c. excluded, and a Jamaica plant of Browne introduced, so that this species may be said to rest chiefly on the West Indian plant; which being probably different from ours, the name, A. stans, *Michx.!* should be continued for our plant.

1. *A. Crux-Andreæ* (Linn.! spec. ed. 2, not of ed. 1. *vid. supra.*)—Add syn. A. linifolium, A. oblongifolium, A. spathulatum, & A. helianthemifolium, *Spach! consp. Hyper. in ann. sci. nat.* 1836.

2. *A. pumilum* (Michx.!)—This species we have recently received from Georgia and have seen in many collections: it is well distinguished by the slender peduncles, which are elongated and refracted after flowering.

3. *A. stans.*—Add syn. A. hypericoides, *Linn. spec. ed.* 1. (partly.)

After no. 4, add:

§ *Sepals small and somewhat equal; styles elongated.*—ISOPHYLLUM, Spach.

5. *A. microsepalum.*—Add syn. Isophyllum Drummondii, *Spach! in ann. sci. nat. l. c. p.* 19.

2. HYPERICUM, *p.* 157–167.

1. *H. pyramidatum.*—Add syn. Roscyna Americana, *Spach! conspect. Hyper. in ann. sci. nat.* 1836.

3. *H. prolificum* (Linn.! Lam.)—Add syn. Myriandra prolifica, *Spach! l. c.* M. spathulata, *Spach! l. c.*

6. *H. galioides.*—Excl. syn. H. rosmarinifolium, *Ell. l. c.* Add syn. H. fasciculatum, *Michx.! l. c.; Willd.! l. c.* H. axillare, *Lam.! l. c.* (fide sp. in *herb. Juss.*) H. Michauxii, *Desrouss.; Poir.! l. c.* Myriandra Michauxii & M. galioides, *Spach! l. c.*

7. *H. fasciculatum* (Lam.! fide sp. in *herb. Desf.!*) not of *Michx.!*—Excl. syn. *Michx.*: also H. Michauxii, *Poir.*—Transfer syn. H. aspalathoides, *Willd.* & H. tenuifolium, *Pursh*, to var β.—Add syn. A. nitidum, *Lam.! in herb. Juss.* Myriandra nitida, *Spach! l. c.*

β. (*aspalathoides*)—Excl. syn. H. axillare, *Lam.* Add syn. H. aspalathoides, *Willd.* (H. rosmarinifolium, *Kinn*, in *herb. Willd.!*) H. tenuifolium, *Pursh! l. c.* Myriandra brachyphylla, *Spach! l. c.*

10. *H. corymbosum.*—Add syn. H. micranthum, *Chois.!* which is wrongly cited under H. maculatum. H. punctatum, *Reichenb. ic. exot. t.* 88. H. maculatum, *Michx.! l. c.*

11. *H. maculatum.*—Excl. syn. H. micranthum, *Chois.*—Texas, Drummond.—Capsule strongly marked with glandular vesicles along the sides of each carpel.

12. *H. aureum.*—H. frondosum, *Michx.!*—Tennessee, *Dr. Currey! &c.* Alabama, *Mr. Buckley!*

13. *H. myrtifolium* (Lam.! fide sp. in *herb. Juss.*)—H. glaucum, *Michx.!* H. sessiliflorum, *Spreng.!* fide sp. in *herb. Willd.* Myriandra glauca, *Spach! l. c.*

14. *H. dolabriforme* (Vent.! fide sp. in *herb. Deless.*)—Add syn. Brathydium grandiflorum, *Spach! l. c.*

15. *H. ambiguum* (Ell.! ex herb.)—Mr. Elliott's specimen somewhat resembles our H. rosmarinifolium.

16. *H. nudiflorum* (Michx.! not of *Reichenb. ic. exot. t.* 87.)—Add syn. Myriandra nudiflora, *Spach! l. c.*—Florida, *Dr. Chapman!*

17. *H. sphærocarpon* (Michx.!)—Add syn. Brathydium sphærocarpon, *Spach! l. c.* B. Chamænerium, *Spach! l. c.* (excl. syn.)

18. *H. opacum* is H. cistifolium, *Lam.!* (fide sp. in *herb. Juss.*) This name being substituted, add syn. H. rosmarinifolium, *Ell.! sk.* 2. *p.* 29. (a narrow-leaved state.) H. nudiflorum, *a. Hook. & Arn.! in jour. bot.* Brathydium hyssopifolium, *Spach! l. c.*—S. Carolina! to Florida! and Louisiana! rather common. Possibly this is the original H. rosmarinifolium also. A well-marked species.

19. *H. pilosum.*—Add syn. Brathys tomentosa, *Spach! l. c.*

20. *H. angulosum* (Michx.!)—Add syn. H. virgatum, *Lam.!* (fide sp. in *herb. Juss.*), a narrow-leaved form: this name should in strictness be adopted for the species. H. hedyotifolium, *Poir.; DC.! l. c.* H. acutifolium, *Ell.! sk.* 2. *p.* 26. (a narrow-leaved state.) Brathys linoides, B. Erythreæ, & B. lanceolata, *Spach! l. c.*—Extremely variable as to foliage, yet a well-marked species.

22. *H. mutilum* (Linn.!)—Add syn. H. quinquenervium (*Walt.!*) *Reichenb. ic. exot. t.* 96.—Brathys quinquenervia, *Spach! l. c.*

23. *H. Canadense* (Linn.!)—Add syn. Brathys Canadensis, *Spach! l. c.*

24. *H. Sarothra* (Michx.!)—Add syn. Brathys gentianoides, *Spach! l. c.*

25. *H. Drummondii.*—Add syn. Brathys Drummondii, *Spach! l. c.*

26. *H. elatum* (Ait. *not of* Juss.)—We have not been able to find any specimen of the plant published in the Hortus Kewensis; which seems to belong to the same group with A. hircinum, &c. But in the Royal Herbarium at Berlin (in the general collection) we met with a plant sent by Mr. Kinn (doubtless from the mountainous portion of the Southern States) under the name of "Hypericum grandiflora", which is entirely new to us, and seems to be Aiton's H. elatum. It is a large flowered species, belonging to the same section with H. hircinum and H. Canariense.

27. *H. fastigiatum* (Ell.! fide *herb.*) is a form of H. adpressum, with longer and more acute leaves, and a larger and more fastigiate cyme than usual. It may be appended as a variety of that species. (*β. fastigiatum.*)

29. *H. sessiliflorum* (Spreng.!) is H. myrtifolium, *Lam. Vid. supra.*

30. *H. virgatum* (Lam!)
32. *H. hedyotifolium* (Poir.)
} are forms of H. angulosum. *Vid. supra.*

31. *H. cistifolium* (Lam.!) is to take the place of our H. opacum. *Vid. supra.*

33. *H. triplinerve* (Vent.!) is not an American plant, and must be excluded.

34. *H. anagalloides* (Cham. & Schlecht.!)—Add syn. *Hook. & Arn. bot. Beechey, p.* 136.—Oregon, *Douglas! Nuttall.*—The original description is not very good: the plant is nearly allied to H. mutilum, and should be placed next that species. The cyme is sometimes nearly naked, with numerous flowers.

35. *H. acutifolium* (Ell.!) is a variety of H. angulosum. (H. virgatum, *Lam.*) *Vid. supra.*

ORDER ILLECEBRACEÆ.

6. LŒFLINGIA, *p.* 174.

L. squarrosa.—Add syn. L. Texana, *Hook.! ic. pl. t.* 285.—Texas, *Drummond!*

ORDER CARYOPHYLLACEÆ.

The Alsineæ are now in the course of elaboration by Mr. Fenzl, of the Imperial Museum at Vienna, who has the most ample materials at his disposal. A portion of his truly excellent monograph is already published (in *Annal. Wiener. Museum.*), and considerable alterations are made in the arrangement of the tribe. As his work is still unfinished, we shall, to prevent confusion, make very few notes upon the tribe at present, but may hereafter give a notice of his arrangement, and make the necessary changes in the synonymy.

2. MERKIA, *p.* 176.

M. physodes (Fisch.!)—Add syn. Stellaria ovalifolia, *Hook.! fl. Bor.-Am.* 1. *p.* 97. (Kotzebue's Sound.)

5. ARENARIA, *p.* 178–182.

4. *A. nardifolia.*—Add syn. *Ledeb.! ic. pl. Ross.-Alt. t.* 6.—Sepals not very obtuse.

6. *A. juniperina* of Pursh! is A. verna. The former species should probably be excluded from the American flora.

10 (*a*). *A.* (*Alsine*) *Douglasii*, Fenzl!—A. verna β. parce pilosa, glandulosa, capsula majore, *Hook. & Arn.! bot. Beechey, suppl. p.* 325.—California, *Douglas!*—Appears to be a distinct species, and may stand between A. tenella, *Nutt.* (which is A. tenuifolia β. Americana, *Fenzl! l. c.*) and A. Pitcheri.

11. *A. Pitcheri.*—Add syn. Alsine microsperma, *Fenzl! l. c.*

14. *A. Grœnlandica* (Spreng.!)—Add syn. Alsine glabra, *Fenzl! l. c.* partly.

15 (*a*). *A. Benthamii* (Fenzl! in herb. Benth.): annual, nearly glabrous, branched from the base; stems slender (2–4 inches high), 1–5-flowered; leaves linear-oblong, cuspidate-acute, much shorter than the internodes; the lowest spatulate, attenuate into a short petiole; sepals ovate, acute, 1- (or slightly 3-) nerved, as long as the capsule; petals spatulate-obovate, shorter than the calyx.

Texas, *Drummond!*—This is too insignificant a species to bear the name of such an excellent botanist. The leaves and stems are sometimes very slightly hairy; the petals inconspicuous. The leaves are punctate under a lens, and cuspidate, just as in Stellaria lanuginosa; the calyx is the same, and so is the slight pubescence; and hence we were inclined to consider it a very diminutive or starved state of that species: but the testa of the seed is tuberculate in this plant; in the other, smooth and even.

21. *A. arctica* (Steven!)—Add syn. *Ledeb.! ic. pl. Ross.-Alt. t.* 413. Alsine arctica, *Fenzl! l. c.*

22. *A. macrocarpa* (Pursh! fide sp. in *herb. Banks.*)—Alsine macrocarpa, *Fenzl! l. c.* A. heteromalla, *Rudolphi.* (N. W. Coast! Arctic sea-shore, &c.)—Allied to A. arctica, but a distinct and remarkable species. Flowers very large.

25. *A. Purshiana*, Seringe, (A. thymifolia, *Pursh!*) is Stellaria humifusa. (v. sp. in *herb. Banks.*)

26. *A. lateriflora* (Linn.!)—Add. syn. A. Hænkeana, *Presl, rel. Hænk.*, fide *Fenzl.* A. buxifolia, *Poir.!* (v. sp. in *herb. Juss.*), which therefore is to be erased from the doubtful species (29). Mœheringia lateriflora, *Fenzl! l. c.*

6. STELLARIA, *p.* 183.

5. *S. Nuttallii.*—Add syn. Alsine Drummondii, *Fenzl! l. c.*

12. *S. nitens.*—Add syn. S. mœnchioides, *Fenzl! l. c.* S. stricta (in part), *Hook.*

16. *S. crispa* (Cham. &. Schlecht.!) is S. borealis *β.* crispa, *Fenzl! l. c.*

19. *S. lanuginosa.*—Spergulastrum lanuginosum, *Michx.! l. c.*—A native also of South America.

7. CERASTIUM, *p.* 187–189.

9. *C. nutans.*—What we consider a slender form of this is C. tenellum, *Fenzl! l. c.* (Texas, *Drummond!* Coll. III. no. 30.)

8. SILENE, *p.* 189–194.

8. *S. quinquevulnera.*—The Californian plant is said to be rather S. Gallica (*Hook. & Arn. l. c.*), which however is scarcely deemed a distinct species.

10. *S. Drummondii* (Hook.!)—To this S. multicaule, *Nutt.* (no. 13.) must be united, as a less pubescent and glandular variety.

15. *S. Virginica* (Linn.!) was founded on both S. Virginica and S. Pennsylvanica; specimens of the two are in his herbarium, but chiefly the latter: the synonym of Gronovius belongs to the former.

18 (*a*). *S. pulchra:* glandular; stem erect; leaves (upper ones) narrowly linear, acute, 1-nerved, closely sessile; flowers (several, large) on

rather long peduncles; calyx cylindrical, elongated; the teeth oblong, with broad membranaceous margins; petals (deep red) nearly equally 4-cleft.—Lychnis pulchra, var. *Hook. & Arn.! bot. Beechey, suppl. p.* 326 (an *Cham. & Schlecht.?*)

California, *Douglas!*—Lower part of the stem wanting in our specimens; the summit naked, sparingly paniculate, 5–9-flowered, or more. Upper leaves 2–3 inches long, 1–2 lines wide. Calyx about an inch long, slightly clavate in fruit. Petals exserted scarcely one-third their length; the limb deeply 4-cleft to the same point; the segments linear, the lateral ones a little smaller: crown small, erose-toothed.—The specimens agree pretty well with the description of Lychnis pulchra, except in the narrower leaves; but there are only 3 styles!

20. *S. Menziesii* (Hook.!)—The specimen of Menzies (in *herb. Banks.!*) is just the S. stellarioides of Nuttall. Hooker's species includes the two; but if they be distinct, the name of *S. Menziesii* ought to be retained for the plant of Menzies. It is evident, however, from the specimens now in our possession, that they are only varieties of the same species.

23. *S. axillaris* (Leavenworth) is most probably Cuphea viscosissima.

11. DIANTHUS, *p.* 195.

D. Caroliniana (Walt.)—The specimen in his herbarium consists of an umbel of Dodecatheon Meadia! in fruit.

ORDER PORTULACACEÆ.

3. CALANDRINA, *p.* 197.

2. *C. speciosa* (Lindl. not of *Hook. bot. mag. t.* 3379) is a synonym of *C. Menziesii.*

5. CLAYTONIA, *p.* 198–202.

4. *C. alsinoides.*—The syn. C. Unalaschkensis is correctly added to this species.—The C. Sibirica of Linnæus (as appears from the specimen in his herbarium, which however wants the root) is the same with the S. Sibirica, *Pallas! in herb. Willd.*; and to it belong C. arctica, *Adams, &c.*, C. Joanniana, *Rœm. & Schult.*, C. Chamissoi, *DC.!* (excl. syn.) and C. acutifolia, *Ledeb. fl. Alt.* not of *herb. Willd.!* (pl. Pall.) which is very different. It has been collected on the islands between Asia and the North West Coast, and probably exists upon the American Continent.

6. *C. perfoliata.*—In cultivated specimens, the raceme is often elongated, and the cauline pair of leaves occasionally almost distinct.

9. *C. exigua.*—Add syn. C. spathulata, β. major and γ. exigua, *Hook. & Arn.! bot. Beechey, suppl. p.* 344. (Both forms appear quite different from the original figure of C. spathulata.)

10. *C. gypsophiloides* (Fisch. & Meyer!) should be placed between C. perfoliata and C. parviflora, from which last perhaps it is not sufficiently distinct.

12. *C. aquatica* (Nutt.) is the same with C. Chamissonis, *Eschs.! & Ledeb. in Spreng. syst.* 1. *p.* 790; *Cham. & Schlecht.! in Linnæa,* 6. *p.* 562 (not of *DC.*), which name must accordingly be adopted. The stolons bear little bulbs, which are noticed by Chamisso, but are not observable in

Nuttall's specimens. Chamisso's plant is from Unalaschka!—"C. stolonifera," mentioned under this species, should have been C. sarmentosa.

14. *C. parvifolia.*—The drawing of Moçino, in Prof. De Candolle's possession, accurately represents our plant.

6. MONTIA, *p.* 202.

M. fontana.—Add syn. M. lamprosperma, *Cham. & Schlecht.! in Linnæa,* 6. *p.* 564. (Seeds larger, less tuberculate, shining.—Unalaschka.)—Add also, Newfoundland, *Pylaie!*

SUBORDER LEWISIEÆ. *Hook.*

Ord. Spætalumeæ, *Nutt.*

Sepals 6–8, broadly ovate, slightly united at the base, petaloid, convolute-imbricate in æstivation, persistent. Petals 8–10 (10–12, *Nutt.*), imbricate in æstivation, oblong-linear, or some of the outer ones ovate, spreading, marcescent and at length twisting around the stamens and pistil. Stamens numerous, inserted with the petals at the base of the calyx: filaments slender, shorter than the petals: anthers linear-oblong, cleft at each end, introrse. Ovary globose-ovoid, slightly stipitate, striated, 1-celled, with a free central placenta, many-ovuled: style persistent, short: stigmas 6–8, filiform, downy. Capsule globose, coriaceo-membranaceous, 1-celled, separating transversely at the base, and there somewhat 6-valved. Seeds numerous, campulitropous, reniform-globose, on long funiculi, which arise from the base of the cell: testa crustaceous, smooth and shining. Embryo terete, curved around the outside of mealy albumen: cotyledons long, unequal.—An herb, with large and thick fusiform roots, which branch below: the bark (brownish externally) bright red within: the inner portion white and farinaceous. Leaves densely imbricated on the short thick caudex, linear-oblong, thick and succulent. Scapes (short) fleshy, articulated above the middle, where they are involucrate with 5–7 subulate membranaceous scales, 1-flowered. Flower large: petals rose-color.

7. LEWISIA. *Pursh, fl.* 1. *p.* 368; *Nutt. in jour. acad. Philad.* 7. *p.* 23, *t.* 2; *Hook. bot. misc.* 1. *p.* 344, *t.* 70, *& bot. Beechey, suppl. p.* 334, *t.* 86.

Character same as of the Suborder.

L. rediviva (Pursh, l. c.)

Throughout the interior of Oregon, near the mountains, in dry prairies along rivers, *Lewis, Douglas! Drummond! Mr. Wyeth! Mr. Tolmie!*—This very singular plant has been examined by Nuttall, who received rather imperfect specimens from Mr. Wyeth, and recently by Hooker (who had previously figured the flower-buds, &c.), whose excellent specimens were furnished by Mr. Tolmie. The plant proves, as Hooker long ago suspected, more nearly allied to Portulacaceæ than to any other family, quite too nearly, we are convinced, to render its complete separation allowable; and hence we have followed the suggestion of the latter author in respect to its arrangement.—The plant is called *Spatulum* or *Spœt'lum* by the natives, who gather the roots and employ them largely as an article of food. The bark being stripped off, the white inner portion is boiled in water, when it forms a substance similar to *Salep* or boiled *Arrow-root.* The dead root, according to Nuttall, almost dissolves into starch by maceration in cold water. The roots are so tenacious of life, that specimens in Lewis's herbarium, as Pursh records, showing some signs of vegetation, were planted in a garden at Philadelphia, where they grew for a year; and Douglas's specimens, treated in the same way, vegetated for a short time in the garden of the London Horticultural Society.

ORDER ELATINACEÆ.

1. ELATINE, *p.* 203.—Add sp.:

2. *E.* (*Merimea*) *Texana* (Hook.): diffusely branched, ascending, puberulent; leaves oblong-spatulate, rather acute, serrate, tapering at the base into a slight petiole, bistipulate; flowers pedicellate, mostly solitary in the axils of the leaves; sepals (ovate-acuminate), petals, stamens, and short styles or stigmas 5; seeds marked with dotted lines.—Merimea (an Bergia?) Texana, *Hook.! ic. pl. t.* 278.

Texas, *Drummond!*—Stems 6–10 inches in length, minutely pubescent with short and thick spreading hairs. Sepals denticulate, rather longer than the narrowly oblong obtuse petals. Stigmas, or short styles, distinct.—This plant certainly falls into Elatine, as characterized by Arnott, whose views we had adopted in the body of this work; and we know not how Merimea of Cambessèdes is to be sufficiently distinguished. The dehiscence in this plant is not loculicidal, which Arnott states to be the character of the order, nor is it truly septicidal, but septifragal.

ORDER LINACEÆ.

1. LINUM, *p.* 204.

The Texan species (no. 37, of Drummond's 2d Collection) which we had doubtingly referred to L. selaginoides, proves to be a different species. The following should be substituted in place of our character, &c.

5. *L. multicaule* (Hook.! mss.): annual; stems (5–10 inches high) usually much branched from the base, rigid; leaves subulate, mucronate-cuspidate, 1-nerved, closely appressed and imbricated; flowers somewhat corymbed; pedicels very short; sepals ovate, rigid, obscurely 1-nerved, strongly cuspidate, with broad scarious somewhat ciliate-serrulate margins; ovary completely 10-celled; styles united above the middle.

ORDER GERANIACEÆ.

1. GERANIUM, *p.* 206.

2. *G. albiflorum.*—This species was first published by Ledebour, under the same name (*Fl. Alt.* 2. *p.* 230, *& ic. pl. Ross.-Alt. t.* 18. Add syn. G. Richardsonii, *Fisch. & Meyer, ind. sem.* 1837; who have changed the name on the supposition of its being different from the Siberian species.

2. ERODIUM, *p.* 207.—Add:

2. *E. macrophyllum* (Hook. & Arn.): pubescent; leaves cordate, on long petioles, 5–7-lobed; the lobes short, crenate-serrate; peduncles as long as the leaves, and, as well as the calyx, glandular-hairy; umbels 3–5-flowered; sepals elliptical, mucronate-acuminate, with membranaceous margins; carpels oblong, attenuate at the base, truncate at the summit, silky-villous. *Hook. & Arn.! suppl. bot. Beechey, p.* 327.

California, *Douglas!*—Leaves 2–2½ inches long. Awns of the fruit spirally twisted, and bearded internally with red hairs.

ORDER OXALIDACEÆ.

4. OXALIS, *p.* 210.

4 (*a*). *O. vespertilionis:* stemless; bulb solitary, scaly; leaves 3-foliolate, and, with the whole plant, glabrous; leaflets dilated, broadly cuneate at the base, 2-lobed; the lobes oblong, divaricate; scape 5–8-flowered, longer than the leaves; pedicels 2–3 times as long as the flowers; sepals linear-oblong, with 3–4 glands at the tip; petals (violet) narrowly oblong, entire; filaments glabrous, toothless, the longer ones much shorter than the hairy styles.

Texas, *Drummond!*—Bulb about the size of a hazel-nut, clothed with brown scales. Petioles 3–5 inches long. Leaflets about an inch wide and scarcely one-third of an inch from the base to the inner angle of the notch; the lobes rather obtuse. Peduncle 5–8 inches long: longer pedicels an inch or more in length. Flowers smaller than in O. violacea. Sepals with several confluent orange-colored glands at the tip.—Apparently allied to O. latifolia, *Kunth*, but differs in being quite glabrous in the narrow lobes of the leaves, and in the toothless filaments. From O. violacea it is readily distinguished by the form of the leaves.

ORDER XXXI (*a*). OCHNACEÆ, *DC.*

Sepals 4–5, persistent: æstivation imbricate. Petals hypogynous, as many as the sepals or rarely more numerous, deciduous, spreading, imbricate in æstivation. Stamens as many or twice as many as the petals, or sometimes indefinite, inserted on the hypogynous disk: filaments persistent: anthers innate or introrse, usually opening by pores. Carpels equal in number with the petals, distinct or sometimes more or less combined, seated on the enlarged tumid fleshy disk (gynobase); their styles combined into one, which springs directly from the disk between the bases of the ovaries: ovules solitary, erect or sometimes pendulous. Fruit of 4–5 or more drupaceous carpels, articulated with the torus. Seed anatropous, destitute of albumen. Radicle short: cotyledons thick. —Trees or shrubs, (natives of the tropics), with simple alternate stipulate leaves.

1. CASTELA. *Turpin, in ann. mus.* 7. *t.* 5; *Hook. bot. misc.* 1. *p.* 271, *t.* 55.

Diœcio-polygamous. Calyx small, 4-cleft. Petals 4, oval, concave, spreading. Sterile Fl. Stamens 8, inserted on a small hypogynous disk: filaments filiform: anthers introrse, opening longitudinally nearly their whole length? Ovaries abortive. Fertile Fl. Stamens 8: filaments short: anthers mostly sterile. Ovaries 4, united in the axis: style very short: stigmas 4, recurved. Drupes 4, at length distinct and spreading. Seed pendulous, with a small quantity of albumen.—Evergreen (West Indian) shrubs, with somewhat thorny branchlets, and alternate entire (thick) leaves. Stipules none. Flowers small, axillary.

This genus varies from the character assigned to the order Ochnaceæ in several points, some of which we have introduced into the ordinal character. It doubtless forms a distinct tribe or section.

1. *C. Nicholsoni* (Hook.): leaves elliptical, coriaceous, mucronulate, the lower surface as well as the branchlets silky-canescent; spines axillary; stamens hirsute. *Hook. l. c.*

β. Texana: leaves lanceolate or oblong-linear.

Texas, *Drummond!* (*β.*) A native also of Antigua (where it is called *Goat-bush* by the negroes), whence it was sent to Sir Wm. Hooker, by Dr. T. Nicholson. The Texan plant accords with the figure, except that the leaves are mostly narrower.

Order ZANTHOXYLACEÆ.

1. ZANTHOXYLUM, *p.* 214.

§ 3. *Sepals, petals, and stamens* 4: *ovaries* 2.—Fagara, Jacq.

3. *Z. Pterota?* (H. B. & K.): prickly; leaves unequally pinnate; leaflets 3–4 [–6] pairs, obovate-oblong, obtuse, emarginate, glabrous, the margins crenate and glandular-punctate; petiole winged, aculeolate; spikes axillary, solitary or geminate, shorter than the petiole; ovaries 2; capsule solitary, pisiform (prickles geminate, stipular, uncinate). *Kunth, syn.* 3. *p.* 325; *DC. prodr.* 1. *p.* 725. Fagara Pterota, *Linn. amœn.* 5. *p.* 393.

Texas, *Drummond!* (Without flowers or fruit.)—The leaflets in the Texan plant are small, mostly 6 pairs, and the petiole is unarmed.

2. PTELEA, *p.* 214.

1. *P. trifoliata.*—Add syn. *Guimp. Otto, & Hayne, holz. t.* 74.

β. mollis: branchlets, petioles, and lower surface of the leaves clothed with a soft tomentose pubescence, even when old. (Texas, *Drummond!*)

Order ANACARDIACEÆ.

1. RHUS, *p.* 216—219.

1. *R. typhina.*—Upon an abnormal state of this (according to Mr. Ben-

nett), the Datisca hirta of Linnæus is founded. Vid. *Pl. Javan. rariores, p.* 80.

5. *R. venenata.*—The R. Vernix, *Linn.* was originally founded entirely on the N. American species; hence the Linnæan name ought to have been continued for our plant.

For the name of the subgenus 4. (*p.* 219) '**Malsosma**, *Nutt.*,' the prior name of **Lithrea**, *Miers; Hook. & Arn. bot. misc.* 3. *p.* 175, must be substituted.

8. *R. aromatica.*—The plant from the western coast of Mexico, which Hooker & Arnott have noticed as a variety of this species (*Bot. Beechey, p.* 284,) seems to us a distinct species.

Order MALVACEÆ.

2. MALVA, *p.* 225–227.

3. *M. Houghtonii.*—Upper leaves sometimes palmately 2–4-lobed at the base.

3 (*a*). *M. malachroides* (Hook. & Arn.): herbaceous, erect, pilose-hispid; leaves on long petioles, membranaceous, deeply cordate, obtusely 6–7-lobed, coarsely and somewhat acutely toothed; stipules subulate; peduncle terminal; flowers in a spike; bracteoles 3, setaceous, and with the calyx very hispid; petals 2-cleft. *Hook. & Arn.! bot. Beechey, suppl. p.* 326.

California, *Douglas!*—Leaves 2 inches or more in diameter; the petiole longer than the lamina. Flowers apparently purple, in a dense spike. Fruit not known.

8. *M. Papaver.*—Add syn. Nuttallia cordifolia, *Bart. fl. N. Amer. t.* 62. N. cordata, *Lindl. bot. reg. t.* 1938. The plant figured in the Botanical Register appears to be one of the numerous forms of M. Papaver. It was described from specimens raised from seeds collected by Mr. Drummond, probably in Texas.

9. SIDA, *p.* 231–235.

2. *S. Elliottii.*—Add the locality: Louisiana, *Prof. Carpenter!*

β. Texana: leaves small; petiole about one-third the length of the lamina; stem much branched.

Texas, *Drummond!*—Except in the characters here given, we discover no other difference between this plant and the common form of S. Elliottii. We have not seen the fruit: but there are 10 styles.

5. *S. hispida.*—Add syn. *Hook. & Arn. in jour. bot.* 1. *p.* 198. (St. Louis, *Drummond!*)—Carpels 5, pubescent, obtuse. This is probably the plant of Elliott, but perhaps not of Pursh.

9. *S. obliqua.*—Add syn. Malva Californica, *Presl! rel. Hænk.* 2. *p.* 121. (v. sp. in *herb. Imp. Vindob.*) California, *Hænke!*

12. *S. dioica.*—Alluvial grounds, Columbus, Ohio, *Mr. Sullivant!* Cincinnati, *Mr. Lea!* July.—Plant 3–4 feet high. Lower leaves a foot or more in diameter; lobes incisely pinnatifid and iregularly toothed. Flowers white, in a large leafy panicle, sometimes with 6 petals and a 6-cleft calyx. Petals obovate. Carpels usually about 8, transversely wrinkled on the back, and somewhat scabrous, with a very short mucronate point.

13. *S. alcæoides.*—Add to the character: Carpels 10, ovate, acute, hispid below, with a transverse spur-like process in the upper part of the cell.

Hills, Tennessee, April–May, *Dr. Currey!*—Flowers apparently white, or pale rose-color. The transverse process in the fruit is like that of Modiola, except that it is situated near the summit of the cell.

14. *S. malvæflora.*—Add syn. *Hook. & Arn. bot. Beechey, suppl. p.* 326. Nuttallia malvæflora, *Fisch. & Trautv. ind. sem. St. Petersb.* 1838.—Our specimen from Mr. Douglas's Californian collection is probably the species referred to in the work cited above; but the flowers are more than twice as large as even in our cultivated specimens of S. malvæflora received from Sir Wm. Hooker. We strongly suspect that S. Oregana, *Nutt.* and even S. delphinifolia, *Nutt.* are only varieties of this species.

16. *S. diploscypha.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 326, *t.* 76.—The plant is annual.

16 (*a*). *S. grossulariæfolia* (Hook. & Arn.): hoary with a stellate pubescence; leaves cordate, 3–5-parted; the segments cuneiform, 2–3-cleft; peduncles axillary, 3–5-flowered; calyx 5-cleft, with 2–3 subulate deciduous leaflets at the base. *Hook. & Arn.! l. c.*
Bamcock River, (Snake Country), Oregon, *Mr. Tolmie!*—Flowers large, red, resembling those of S. coccinea and S. dissecta, but quite different in the foliage. *Hook. & Arn.*

19. *S. dissecta.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 326.—Bear River (Snake Country), Oregon, *Mr. Tolmie!*

11. PAVONIA. *Cavan. diss.* 3. *p.* 132; *Lam. ill. t.* 585.

Calyx 5-cleft, surrounded by a few- or many-leaved involucel. Ovary 5- (rarely 4-) celled; with a single ovule in each cell: style 8–10-cleft at the summit. Carpels united into a 5-lobed 5-celled capsule; each 2-valved, one-seeded. Radicle inferior. Frutescent, or rarely herbaceous plants.

1. *P. Drummondii:* leaves roundish-cordate, somewhat 3-lobed, rather obtuse, crenately toothed, pubescent above, velvety-tomentose beneath; flowers 4–6 together, clustered at the summit of elongated axillary peduncles and flowering branches; leaflets of the involucel 8–10, linear-spatulate, rather shorter than the calyx; carpels glabrous.
Texas, *Drummond!*—Stem shrubby and apparently tall, softly pubescent. Leaves 2–3 inches in diameter, with 3 short lobes. Flowers scarlet, about an inch long. Stamineal column at length much exserted. Capsule red, formed of 5 ovate very obtuse carpels, which finally separate and split into 2 valves. Seeds glabrous.—Allied apparently to P. paniculata of Cavanilles.

ORDER XXXVIII (*a*). BYTTNERIACEÆ. *R. Br.*

Sepals 5, more or less united at the base, naked or involucellate: æstivation valvate. Petals hypogynous, equal in number with the sepals, often saccate at the base and variously lengthened at the apex, with a twisted or convolute æstivation, sometimes wanting. Stamens hypogynous, as many as the petals or more numerous, more or less monadelphous; some of them often sterile: anthers 2-celled, extrorse. Ovary of 5 or rarely fewer carpels, which are more or less

united : styles as many as the carpels, distinct or united : ovules 2–3 or more in each carpel, ascending. Capsule 3–5-celled, 3–5-valved. Seeds anatropous, often strophiolate or winged : albumen oily or fleshy, sometimes none. Embryo usually straight : cotyledons foliaceous, flat and plaited, or rolled round the plumule.—Trees or shrubs. Leaves alternate, simple, exstipulate : pubescence often stellate.

1. MELOCHIA. *Linn.* (excl. spec.); *H. B. & K. nov. gen.* 5. *p.* 322.

Calyx 5-cleft, persistent, naked or with 1–3 bracteoles at the base. Petals 5, spreading. Stamens 5, opposite the petals, short, monadelphous at the base. Styles 5: stigmas slightly clavate. Carpels united into a 5-angled 5-celled loculicidal capsule. Seeds 1–2 in each cell. Cotyledons flat, foliaceous, reniform.—Shrubby plants (nearly confined to tropical America), with alternate serrated leaves. Peduncles several-flowered, terminal, axillary, or opposite the leaves. Flowers violet or white.

1. *M. pyramidata* (Linn.): leaves ovate-lanceolate, toothed, glabrous; peduncles 5–6-flowered, longer than the petioles; petioles and branches puberulent. *DC.*—*Cav. diss.* 6. *t.* 172, *f.* 1; *DC. prodr.* 1. *p.* 490.

Texas, between San Felipe and Brazos, *Drummond!*—Stem branching; the branches marked with a broad pubescent longitudinal line continued from the base of each petiole. Lower leaves ovate; the upper ones narrower, about an inch long. Flowers 3–4 lines in diameter. Angles of the carpels compressed, cuspidate: cells 2-seeded.

ORDER VITACEÆ.

1. VITIS, *p.* 242–245.

9. *V. Caribæa ?* (DC.): young branches, leaves and peduncles, tomentose; leaves roundish-cordate, 3- or obscurely 5-lobed, coarsely serrate, somewhat coriaceous, with a deep sinus, glabrous above, tomentose with a whitish pubescence beneath. *Hook. & Arn.! bot. Beechey; suppl. p.* 327, scarcely of *DC.* V. Indica, *Swartz, obs. bot. p.* 95 ? ; *H. B. & K. nov. gen.* 5. *p.* 227.

California, *Douglas!*—Fruit the size of a currant.—This is doubtfully referred to V. Caribæa by Hooker & Arnott; but to us it seems that it cannot be the plant of De Candolle, although it may of Swartz, while it is very probably the V. Indica of Kunth.

ORDER ACERACEÆ.

1. ACER, *p.* 246–249.

2. *A. spicatum.*—Add syn. A. montanum, *Guimp. Otto, & Hayne, holz. t.* 48.

5. *A. glabrum.*—We have the same species from Douglas's collection. It is said to come from the Blue Mountains of Oregon. The specimens are more perfect than those of Dr. James (but like them are in fruit only): the wings of the fruit are a little longer in proportion, and erect rather than divergent.

8. *A. saccharinum* was wholly established by Linnæus upon a specimen (leaves only) received from Kalm; which specimen, we find on inspection, belongs to A. dasycarpum! Still as the A. saccharinum of Wangenheim, Michaux, and all succeeding authors, is the true *Sugar-Maple*, a change in the application of the name would be unwarrantable.

10. *A. rubrum.*—The A. rubrum of Spach is a form of this species with the leaves rather more deeply lobed and incised than usual, and the flowers only reddish; while his A. sanguineum is the A. rubrum as figured in the Sylva of the younger Michaux.—After our var. β. add:

γ. leaves rather large, rigid, cordate at the base, densely tomentose beneath, the tomentum somewhat persistent.—A. rubrum γ.? (Drummondii), *Hook. & Arn.! in. jour. bot. p.* 199.—(Louisiana, *Drummond! Prof. Carpenter!*) This and our β. are certainly only forms of this somewhat polymorphous species.

11. *A. barbatum* (Michx.!) should be discarded as a species, it having been founded (as we had indeed long suspected) upon the flowers of A. saccharinum, the fruit of A. rubrum, and a leaf of something else, apparently of A. spicatum, (v. sp. in *herb. Michx. propr. & herb. Richard.*)

2. NEGUNDO, *p.* 249.

1. *N. aceroides.*—Add syn. N. fraxinifolium, *Guimp. Otto, & Hayne, holz. t.* 95.

2. *N. Californicum:* leaves 3-foliolate, pubescent-tomentose especially beneath; the petioles and young branches very velvety; leaflets ovate, acuminate, 3-lobed, incised and serrate; fruit oblong, pubescent, rather shorter than the obliquely obovate almost erect wings.—*Hook. & Arn.! bot. Beechey, suppl. p.* 327, *t.* 77.—Fine specimens in fruit having been found in Douglas's collection, a more complete character is given of this species, which is proved to be totally distinct both from N. aceroides and N. Mexicanum, which Hooker has also received from Andrieux.

(ORDER MALPIGHIACEÆ.)

Banisteria microphylla (Jacq.) is said to be a native of Carolina, we think incorrectly. Yet there is a Malpighiaceous plant from Fraser in Mr. Bentham's herbarium, *said to come* from Carolina, which Mr. Adr. Jussieu informs us is Heteropteris purpurea, *H. B. & K.*, and probably also Banisteria microphylla, *Jacq.*

ORDER HIPPOCASTANACEÆ.

2. UNGNODIA, *p.* 253, should be UNGNADIA.

Ungnadia speciosa, was so called by Endlicher in memory of Baron Ungnade, many years since Austrian Ambassador at Constantinople, who was the first to introduce the *Horse-Chestnut* into Western Europe.

ORDER SAPINDACEÆ.

2. SAPINDUS, *p.* 254.

1. *S. marginatus* (Willd.!)—Add syn. S. Drummondii (*a.*) *Hook. & Arn.! bot. Beechey, p.* 289; not *β.* which is probably a different species.

ORDER CELASTRACEÆ.

2. CELASTRUS, *p.* 257.

Celastrus bullatus of Linnæus is founded on a figure of Plukenet, which represents C. scandens! But Plukenet's phrase 'Euonymus Virginianus rotundifolius, capsulis . . . eleganter bullatis', &c. is taken from Banister, whose plant is Spiræa opulifolia!

ORDER RHAMNACEÆ.

1. BERCHEMIA, *p.* 260.

1. *B. volubilis* is said by Prof. Carpenter and others to climb to the height of 100 feet or more.

2. RHAMNUS, *p.* 260.

6. *R. parvifolius.*—We have reason to suspect that this plant is not distinct from R. lanceolatus.

13. *R? obtusifolius* (Hook. ined.): somewhat thorny, glabrous; branches whitish; leaves ovate or oblong-ovate, obtuse, about 3-nerved from the base, obscurely serrate, (or sometimes with distant rather conspicuous teeth), rather shining above (apparently deciduous); fascicles of flowers shorter than the petioles.

Texas, *Drummond!*—The specimens are destitute of flowers, the persistent base of the calyx only remaining on the pedicels, so that it may be a Ceanothus; but Hooker, whose manuscript name we adopt, has probably referred it correctly to this genus. The leaves vary from 1 to 2 inches in length and ½–1 inch in width, on rather slender petioles.

2 (*a*). CONDALIA. *Cav. ic.* 6. *p.* 16, *t.* 525; *Brongn. l. c. p.* 48.

Calyx spreading, 4–5-cleft, adherent to the base of the ovary. Petals none. Stamens 4–5, alternate with the segments of the calyx, inserted into the margin of the flat 4–5-angled disk which surrounds the ovary: anthers 2-celled. Ovary 2–3-celled: style short: stigmas 2–3, minute. Fruit a 1-celled 1-seeded drupe. Seed ovate, not furrowed.—Smooth much branched shrubs, with spiny branchlets. Leaves alternate, almost sessile, obovate-oblong, entire. Flowers axillary, minute.

1. *C. obovata* (Hook.): leaves obovate-spatulate, tapering at the base and slightly petioled, obtuse, mucronulate, coriaceo-membranaceous; flowers

nearly sessile, somewhat clustered; calyx persistent, 4–5-cleft; stigmas 3.—*Hook.! ic. pl. t.* 287.

Texas, *Drummond!*—Branches rigid, flexuous, grayish. Leaves about an inch long. Flowers in small axillary fascicles. Drupe the size of a pepper-corn, on very short pedicels.—Very different from C. microphylla; the leaves very much larger, and not cuspidate, the pedicels very short, &c.

4. CEANOTHUS, *p.* 264–268.

1. *C. Americanus* γ.—Excl. syn. C. ovatus, *Desf.*

2. *C. ovalis.*—To this belongs C. ovatus, *Desf.!* which is the prior name, but less appropriate, as the leaves are never ovate.

5. *C. velutinus* (Hook.!)—Add var.

β.? lævigatus: leaves glabrous beneath.—C. lævigatus, *Hook.! fl. Bor.-Am.* 1. *p.* 125. (Nootka, *Menzies!*) This was omitted by accident.—The following may stand between this and C. incanus.

5 (*a*). *C. sorediatus* (Hook. & Arn.): branches terete, verrucose with resinous dots; branchlets spreading, somewhat silky; leaves elliptic-ovate, obtuse, somewhat coriaceous, glandular-denticulate, 3-ribbed, glabrous above, canescent beneath, silky on the veins; clusters many-flowered, dense, scarcely longer than the leaves (flowers blue). *Hook. & Arn.! bot. Beechey, suppl. p.* 328.

California, *Douglas!*—Ovary without lobes.

12. *C. divaricatus.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 328.—Branches terete, often pruinose; panicles elongated and spicate-racemose, densely flowered. (California, *Douglas!* and Snake Country, *Mr. Tolmie!*)—The specimens are much more complete than those of Mr. Nuttall, and Hooker has properly amended the specific character. In some cases the leaves are rather conspicuously serrulate.

12 (*a*). *C. integerrimus* (Hook. & Arn.): glabrous; branches somewhat angled, slightly resinous-viscous; leaves 3-ribbed, rather membranaceous, oblong-elliptical, obtuse, entire, paler beneath; panicles elongated, many-flowered; flowers glomerate, white. *Hook. & Arn. l. c. p.* 329.

California, *Douglas!*—Panicles very long and narrow. Plant entirely glabrous, except the very youngest leaves or branches. Ovary without projecting lobes. *Hook. & Arn.*

14. *C. cuneatus.*—Vid. *Hook. & Arn. l. c.* for remarks in confirmation of our own suggestions respecting this and the following species. (California, *Douglas!*)

17. *C. rigidus.*—Add syn. *Hook. & Arn.! l. c.* (California, *Douglas!*)

19. *C. papillosus.*—Add syn. *Hook. & Arn.! l. c.*; *Hook. ic. pl. t.* 272.

ORDER LEGUMINOSÆ.

6. VIGNA, *p.* 281.

V. glabra.—Plant more or less hirsute, as also the legumes; the latter often torose.—New Orleans, *Dr. Riddell!* Tampa Bay, Florida, *Dr. Leavenworth!*

11. RHYNCHOSIA, *p.* 283–285.

1. *R. Caribæa.*—Our plant is not the R. Caribæa, *DC.* (Glycine Caribæa, *Jacq.*) which is a rather large-flowered species. It is *R. minima* of the same author, which name should be substituted, and the synonymy corrected accordingly.

1 (*a*). *R. Texana:* minutely velvety-pubescent; stems diffuse, much branched from the base; stipules setaceous, minute; leaflets (small) rhombic-ovate or ovate-lanceolate, obtuse, mucronulate, rounded or slightly cordate at the base, pubescent and dotted with minute resinous glands beneath, the upper surface reticulated and nearly glabrous; peduncles axillary, mostly 1-flowered, much shorter than the petioles; teeth of the calyx attenuate-subulate, rather shorter than the corolla; legumes pubescent, oblong, narrowed at the base, nearly straight.
Texas, *Drummond!*—Stems decumbent, scarcely twining. Leaflets about half an inch in length. Flowers small. The lower tooth of the calyx is nearly as long as the corolla.

3. *R. tomentosa δ. erecta.*—Add syn. Glycine Caroliniana, *Spreng. syst.* 3. *p.* 197.

13. GALACTIA, *p.* 287–289.

5. *G. canescens.*—The peduncles towards the summit of the stem bear linear several-seeded (canescent) legumes; but those of the prostrate or radicant peduncles are roundish and only 1-seeded, and the flowers apparently apetalous. The specimens from which the plant was first described were imperfect.

8. *G.* (*Galactella*) *sessiliflora.*—Add to the character: Legumes linear-oblong, about 6-seeded.—Add syn. Glycine stricta, *Hook. & Arn.! in compan. to bot. mag.* 1. *p.* 22. (Covington, Lousiana, and New Orleans, *Drummond!*)—This, with the preceding species, and also G. angustifolia, *Kunth*, and perhaps G. brachystachys, *Benth.*, have a peculiar habit, and are nearly erect plants; they probably form a distinct section of the genus.

9. *G. marginalis* (Benth.!)—Add syn. Cologania? heterophylla, *Gillies; Hook. & Arn.! in bot. misc.* 3. *p.* 181, fide sp. in *herb. Arn.* (Extra-tropical, South America.)

10. *G.* (*Galactopsis*) *Elliottii.*—Tampa Bay, Florida, *Dr. Leavenworth!*
β. Leavenworthii: silky-pubescent throughout. (East Florida, *Dr. Leavenworth!*)

15. SESBANIA, *p.* 293.

1. *S. macrocarpa.*—Add syn. *Bart. fl. N. Amer. t.* 28.—The calyx at length separates from the base, and remains for a considerable time on the pedicel.

16. DAUBENTONIA, *p.* 293.

1. *D. longifolia* (DC.!)—The Texan plant accords with that of De Candolle.

18. ROBINIA, *p.* 294.—Add to the generic character:

The petioles are dilated at the base and include the buds of the succeeding year.

2. *R. viscosa.*—Add syn. *Guimp. Otto, & Hayne, holz. t.* 65.

3. *R. hispida.*—Add syn. *Guimp. Otto, & Hayne. holz. t.* 60.

24. INDIGOFERA, *p.* 298.

1. *I. Caroliniana.*—Texas, *Drummond!*

2. *I. leptosepala.*—Texas, *Drummond!*—Add syn. I. tinctoria, *Hook. & Arn.! in compan. to bot. mag.* 1. *p.* 22.

25. PSORALEA, *p.* 299–305.

3. *P. tenuiflora* (Pursh !)—The specimen in Mr. Lambert's herbarium is a very poor one, and the flowers have nearly all fallen off. It is very possibly the same with P. obtusiloba, although that species is canescently hairy (when young) and very slightly glandular; while Pursh's plant is glabrous and the glands are conspicuous.

4. *P. longifolia* should be stricken out: the synonym is already adduced under Phaca longifolia, *p.* 346, where it properly belongs.

8. *P. floribunda*, and 9. *P. obtusiloba.*—Notwithstanding the manifest difference in the calyx between this and the succeeding species, we have specimens so nearly intermediate in this respect, that we have good reason to doubt whether P. obtusiloba is more than a variety. The racemes of the latter are however much fewer-flowered, and the leaflets shorter and broader. The fruit of P. floribunda is oval, pointed, not wrinkled, but covered with glandular dots. The habit of P. obtusiloba is not unlike Baptisia tinctoria; and we suspect it may prove to be P. tenuiflora, as remarked above.

13. *P. cryptocarpa* is the same with *P. cuspidata* of Pursh! (*fl. suppl.* 2. *p.* 741), from "Upper Louisiana," now Missouri, *Bradbury!* a species which had by accident escaped our notice; that name must therefore be substituted.

14. *P. brachiata* (Dougl.!) must be united with P. esculenta. The specimen of Lewis (in *herb. Lamb.*) is just the P. brachiata, as figured by Hooker; but is in fruit. The figure of Pursh is taken from a flowering specimen of Nuttall's in the same herbarium (although Pursh makes no mention of having seen any specimen besides that of Lewis), which is only a different state, and scarcely to be distinguished as a variety.

23. *P. rhombifolia* should have been placed after P. physodes.

24. *P. Onobrychis.*—Add syn. *Bot. reg. t.* 453.—Near Spartanburg, S. Carolina, *Mr. E. Rowland!*—Instead of the remark: 'Very nearly to the two preceding species', read: Allied to P. melilotoides and P. eglandulosa. —Add to the character: Stipules linear-subulate.

24 (*a*). *P. stipulata:* nearly glabrous, not glandular; stems ascending; leaves pinnately 3-foliolate; leaflets ovate-elliptical, obtuse, mucronulate, longer than the petiole; stipules ovate; spikes capitate, on peduncles about the length of the leaves; bracts minute, caducous; calyx much shorter than

the corolla, glandless; the lowest tooth a little longest, acute; the others equal, oblong, obtuse.

Falls of the Ohio, *Mr. Wm. Jones!* (communicated by *Dr. Clapp.*) June.—Stems about 2 feet in length, rather stout, branched from the base, diffuse or ascending; the young branches, petioles, calyx, &c. a little pubescent with appressed hairs. Lower petioles about the length of the leaflets (an inch or more); the upper ones very short. Leaflets reticulated, sometimes retuse, entirely destitute of glands, as is the whole plant. Stipules of the lower leaves about half the length of the petioles, obtuse; the uppermost as long as the petioles, acuminate. Flowers rather large, apparently pale blue, the keel and wings tipped with violet-purple. Fruit not seen.—A very distinct species. The habit of the plant is somewhat like Trifolium pratense.

24 (bis). *P. physodes* (Dougl.!)—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 333.—Our plant is the same with Hooker's, which was described from specimens in an advanced state, when the inflated calyx becomes as long as the withered corolla.

25. *P. orbicularis* (Lindl.!)—Add syn. *Hook. & Arn.! l. c.*—Leaflets roundish-cuneiform, dotted. Stipules small, membranaceous.

Under the name of P. macrostachya two species have been confounded, as we had suspected. These Hooker has recently distinguished, and we therefore substitute the following amended characters.

26. *P. macrostachya* (DC.): pubescent; stem, petioles, and peduncles scabrous with elevated glands; leaves pinnately 3-foliolate; leaflets lanceolate-ovate, thickly dotted on both sides, acuminate, acute at the base; stipules small, lanceolate; spikes cylindrical, dense, very long, on peduncles 4 times the length of the leaves; the rachis, calyx and bracts very villous with mostly blackish hairs; calyx not glandular, longer than the rhombic acuminate-cuspidate bracts, the lower tooth nearly as long as the corolla.—*DC.! prodr.* 2. *p.* 220; *Hook. & Arn.! bot. Beechey, suppl. p.* 332; not of *Lindl.*

Nootka, *Lagasca*, ex *De Candolle!* California, *Douglas!*—The spikes are often 4 inches in length, and narrow; the villous pubescence which is blackish in Douglas's plant, is whitish in the specimen of De Candolle, but there is no other difference.

26 (*a*). *P. strobilina* (Hook & Arn.): stem, petioles, stipules, peduncles, and bracts hirsute, and scabrous with fuscous stipitate glands; leaves pinnately 3-foliolate; leaflets broadly rhombic-oval, nearly glabrous above, dotted with glands, clothed with a soft pubescence beneath; petioles elongated; stipules large, broadly ovate, cuspidate-acuminate, membranaceous; spikes oblong, large and thick, on peduncles scarcely longer than the leaves; bracts broadly ovate, acuminate, glandular, larger than the flowers; calyx hirsute with mostly blackish hairs; the lower tooth as long as the corolla, the others unequal.—*Hook. & Arn.! bot. Beechey, suppl. p.* 332, *t.* 80. P. macrostachya *β.?* of this work.

β. stipules and bracts much smaller.—P. macrostachya, *Lindl.! bot. reg. t.* 1769, not of *DC.*

California! *Douglas!*—Stem striated, tall. Leaflets 2–3 inches long. Spikes thick, about 2 inches long; the bracts conspicuous, and often almost concealing the large purple flowers. Ovary and style clothed with villous hairs.—Very different from the original P. macrostachya, which we had not seen when our account of the genus was published. The P. macrostachya of Lindley we have seen in cultivation, but have no specimen. Judging

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from the figure, we think Hooker has correctly referred it to the present species: it certainly is not De Candolle's plant.

26. AMORPHA, *p.* 304.

1. *A. fruticosa.*—Excl. *β.* (A. glabra, *Desf.*) A. nana, *Nutt.! in Fras. cat.* (not of *gen. pl.*) & *Bot. mag. t.* 2112, is a mere variety of this species.

2. *A. Caroliniana.*—This is *A. glabra* Desf.! (fide *herb. DC.*), which name must be restored, although the character is not perfectly applicable to our specimens.

4. *A. nana.*—Some confusion has arisen respecting this species, which seems to require explanation.—The plant which Mr. Lambert obtained of Fraser as the Amorpha nana of his Catalogue, which has been in cultivation in England ever since under that name, and which is figured in the Botanical Magazine (t. 2112), is a mere variety of A. fruticosa. This is most probably the plant which Nuttall had originally in view, as it accords very well with the wild specimens in Lambert's herbarium, and the A. nana is said in Fraser's Catalogue to be "a very elegant dwarf shrub, with highly odorous purple flowers, &c. . . . It appears intermediate between A. fruticosa and A. pubescens, from both which it is evidently distinct." There is besides an "A. microphylla, *Nuttall*," in Lambert's herbarium, on which Pursh has founded his A. microphylla, and which is the A. nana of Nuttall's Genera, of Hooker, and of this work.

26 (*a*). EYSENHARDTIA, *H. B. & K.*

There are leafy branches of a shrub or tree in Drummond's Texan Collection (no. 162 of the 2d? Coll.) which appear to belong to this genus, but do not entirely accord with the Mexican E. amorphoides. Should it prove to belong to this genus, as is most probable, the Texan plant may be called *E. Drummondii.*

27. DALEA, *p.* 307.

2. *D. lanuginosa* (Nutt.) is *D. lanata*, Spreng. (*syst.* 3. *p.* 327), which name should be adopted.—Missouri, *Dr. Engelmann!*

28. PETALOSTEMON, *p.* 309.

4. *P. macrostachyum.*—Add syn. Dalea compacta, *Spreng. syst.* 3. *p.* 327?—The spikes when young are capitate or oblong merely; but when old they are often much elongated.

5. *P. villosum.*—Add syn. Dalea villosa, *Spreng. l. c.*

29. TRIFOLIUM, *p.* 312–320.

3. *T. eriocephalum.*—Oregon, *Douglas!*

5. *T. albopurpureum* is *T. Macræi*, Hook. & Arn.! (*bot. misc.* 3. *p.* 179, & *bot. Beechey, suppl. p.* 330): the Californian specimens agree exactly with those from Chili, as Hooker observes.—Flowers dark purple, pale at the tips. Stipules often ovate.

5 (*a*). *T. dichotomum* (Hook. & Arn.): erect, dichotomous, pilose with spreading hairs; leaflets narrowly obovate, denticulate; stipules broadly

ovate, acuminate, half as long as the leaflets; heads broadly ovate, obtuse, on long peduncles; flowers sessile; calyx densely clothed with silky hairs; the teeth long, setaceous, straight, nearly equal, as long as the corolla.—*Hook. & Arn.! bot. Beechey, suppl. p.* 330.

California, *Douglas!*—A larger and stouter plant than the preceding; the stipules ½ to ¾ of an inch in length; the heads more than an inch long. Corolla apparently purple. *Hook. & Arn.*—We fear this may prove to be only a luxuriant variety of T. Macræi.

8. *T. longipes.*—Oregon, *Douglas!*

13. *T. reflexum.*—Excl. syn. T. Pennsylvanicum, *Willd.*, which, from the specimen in his herbarium, may, we think, be referred to T. medium. We do not find sufficient proof of its American origin.

20 (*a*). *T. macrocalyx* (Hook.): slightly hairy; stems ascending, slender; leaves on slender petioles; leaflets obovate-cuneiform, retuse, serrulate; stipules ovate-lanceolate; heads rather few-flowered, subglobose, on long peduncles; flowers at length deflexed, pedicellate; calyx broad, persistent, reticulated, very deeply bilabiate; the lower lip minute, linear-subulate; the upper 4-cleft, nearly as long as the persistent and scarious corolla; vexillum and wings laciniate-denticulate at the apex; the keel very small; legume 7–9-seeded, ciliate above.—*Hook.! ic. pl. t.* 275.

Texas, near Bexar, *Berlandier!*—A singular species, apparently annual, about a span or sometimes nearly a foot high. Flowers large in proportion, brown when dry: vexillum sessile, broadly ovate; the sides deflexed, so as nearly to cover the other petals.—A very singular species.

22. *T. variegatum.*—Oregon, *Douglas!*—To var. *β.* add syn. T. melananthum, *Hook. & Arn.! bot. Beechey, suppl. p.* 331.—A larger plant than the T. variegatum, with the flowers apparently dark purple throughout; perhaps a distinct species.

23. *T. fimbriatum.*—This, with T. spinulosum, *Dougl.* and our T. heterodon (which would be the most appropriate name for the species) with its varieties, are all forms of one species. This view is taken by Hooker, who (in *bot. Beechey, suppl.*) has characterized several varieties.

25 (*a*). *T. microdon* (Hook. & Arn.): glabrous, somewhat decumbent, branching; leaflets obcordate, sharply serrate; stipules ovate, acuminate, entire; involucre hemispherical, many-cleft, nervose, rather shorter than the dense head; the segments 3–5-cleft, spinulose-serrate; teeth of the calyx very short, triangular-ovate, acute, ciliate-serrulate; legume obliquely obovate, 1-seeded. *Hook. & Arn.! bot. misc.* 3. *p.* 180, *& bot. Beechey, suppl. p.* 330, *t.* 79.

California, *Douglas!*—Stems a foot or more in length. Also a Chilian species.

25 (*b*). *T. obtusiflorum* (Hook.): pubescent; stem elongated; leaflets obovate-lanceolate, spinulose-denticulate; stipules lanceolate, deeply incised, the teeth spinose; peduncles axillary, twice the length of the leaves; involucre small, rather flat, reticulated, incisely spinose, one-third the length of the rather large and loose head; teeth of the calyx subulate-spinose, entire, as long as the tube, much shorter than the corolla; vexillum obtuse, somewhat toothed at the apex, ovary obliquely obovate, 1–2-seeded. *Hook. ic. pl. t.* 281; *Hook. & Arn. bot. Beechey, suppl. p.* 331.

California, *Douglas.*—A foot or more high. Corolla long, pale, with a dark spot on the keel. Wings very narrow, almost as long as the vexillum. Flowers large in proportion to the involucre. *Hook. & Arn.*

26. *T. involucratum.*—We believe the specimen of Willdenow to be the same with the T. involucratum, *Benth.! pl. Hartw.*, and that it is probably distinct from the Californian plant, which must in this case bear the name of *T. tridentatum*, and the synonyms of Willdenow, Sprengel, &c. be excluded.

30. *T. fucatum.*—Add syn. T. physopetalum, *Fisch. & Meyer, ind. sem. St. Petersb.* 1837. *p.* 18.

31. *T. amplectens.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 330, *t.* 78.

34. *T. Wormskioldii* (Lehm.): heads subglobose, involucrate; involucres palmately many-cleft; teeth of the calyx nearly equal, as long as the corolla; stipules broad, fimbriate-ciliate; leaflets obovate, ciliate-serrulate. *Spreng.* —*Lehm. ind. sem. Hamb.; Spreng. syst.* 3. *p.* 209.
~~Greenland~~, *Wormskiold.*—This species would seem from the description to belong to the section Involucrarium, yet we cannot suppose one of this section to be a native of Greenland. We have barely seen a specimen in Sir Wm. Hooker's herbarium, and considered the species as nearly allied to T. medium and T. reflexum.

32. HOSACKIA, *p.* 322–327.

§ 1. Euhosackia.—Add to the character: Legume several-seeded.

7. *H. ochroleuca* (Nutt.) is the same as H. grandiflora, *Benth.!*

§ 2. Drepanolobus, Nutt. accords with Syrmatium, *Vogel, in Linnæa,* 10. *p.* 591, which must therefore be adopted either as a genus or subgenus.—Add to the character: Legume mostly 1–3-seeded.

10. *H. tomentosa.*—Add syn. Syrmatium tomentosum, *Vogel! l. c.* +

15. *H. crassifolia* (Nutt.; not of Benth. nor of this work, p. 323) appears to be the same with H. cytisoides.

16. *H. scoparia* (Nutt.) is the same as Syrmatium glabrum, *Vogel! l. c.*

§ 3. Microlotus.—Add to the character: Legume several-seeded. Add syn. Anisolotus, *Bernh. select. sem. hort. Erfurt.* 1837.

24. *H. subpinnata.*—Add syn. Anisolotus anthylloides, *Bernh. l. c.*

25. *H. Wrangeliana.*—Add syn. Anisolotus Wrangeliana, *Bernh. l. c.*

§ 4. Psychopsis.—Add to the character: Legume 4–8-seeded.

29. *H. pilosa* (Nutt.) is too near H. subpinnata. No !

Tribe ASTRAGALEÆ, *p.* 328.

The stamens are by mistake said to be 'monadelphous' instead of diadelphous.

33. ASTRAGALUS, *p.* 328–3~~4~~8. 3

1. *A. Hypoglottis.*—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 334. (Interior of California) A. goniatus, *Nutt.!*

10. *A. Missouriensis.*—Excl. syn. Oxytropis argentata, *Pursh.* Add syn. A. melanocarpus, *Richards. appx. Frankl. journ. ed.* 2. *p.* 28. A. melanocarpus, *Fras.! cat.*

[illegible] Hartw.

11. *A. argophyllus* (Nutt.) is A. glareosus, *Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 152, excluding the synonym.

15. *A. trichocalyx* (Nutt.)—This is the same with *A. Mexicanus* Alph. DC. (in *5me notice pl. rar. Genève.*) from Mexico (Texas?), *Berlandier* (v. sp. in *herb. Hook.*), which being the earliest name must be adopted.

22. *A. glareosus* (Dougl.!—Add syn. *Hook. & Arn.! bot. Beechey, suppl. p.* 334. A. argophyllus, *Nutt.!* in this work no. 11. (excl. syn.), where the plant is more fully described. (About Snake-Fort, on Lewis River, *Mr. Tolmie!*)

25. *A. leptocarpus.*—Also Texas, *Berlandier!*

25 (*a*). *A. didymocarpus* (Hook. & Arn.): somewhat erect, rather hairy; leaflets about 8 pairs, obovate-oblong, emarginate [often 2-cleft at the apex]; stipules small, ovate, membranaceous, slightly connate at the base of the petiole; peduncles longer than the leaves; flowers small, capitate; teeth of the hirsute calyx subulate, straight, as long as the tube; legumes [very small] coriaceous, didymous, rugose, the lobes 1-seeded. *Hook. & Arn.! bot. Beechey, suppl. p.* 334, *t.* 81.
California, *Douglas!*—Stem 6–10 inches high; the root apparently annual. Hairs of the calyx &c. mostly black. Legumes deeply divided into 2 one-seeded lobes, strongly rugose transversely.

28. *A. multicaulis* (Nutt.)—This name is preoccupied by Ledebour for a species of Altaic Siberia. Our plant may therefore bear the name of *A. pubentissimus.*

34. *A. leucophyllus* is Phaca leucophylla, *Hook. & Arn.! l. c.*

35. *A. Purshii* (Dougl.!) is Phaca mollissima, *Nutt.*—Douglas's specimens were not in fruit.

34. OXYTROPIS, *p.* 338–342.

5. *O. Lambertii.*—To this we think Oxytropis argentata, *Pursh!* should be referred, judging from the specimen of Lewis in Mr. Lambert's herbarium. The plant is not Astragalus argentatus, *Pallas!* nor is it A. melanocarpus, *Nutt.! in Fras. cat.*

35. PHACA, *p.* 342–350.

4 (*a*). *P. Hookeriana:* low, canescently pubescent; stems much branched from the base, ascending; leaflets 7–9 pairs, oblong or linear-oblong, slightly petiolulate, rather rigid; stipules lanceolate, membranaceous; spikes short, on peduncles scarcely the length of the leaves; bracts setaceous, about the length of the very short pedicels; teeth of the calyx subulate, shorter than the tube, and about half the length of the (ochroleucous?) corolla; legumes very large, inflated, obovoid, obtuse, tapering into a very short stipe, mottled with purple.
Interior of Oregon, probably near the Rocky Mountains, *Douglas!*—Stem 5–6 inches high, perennial. Flowers rather small; the bracts, calyx, and pedicel pubescent with whitish and black hairs intermixed. Ovary canescent. Legumes perfectly glabrous, thin and membranaceous, obovoid or obovoid-oblong, nearly 2 inches long, whitish and beautifully mottled with purple.—Our specimens are nearly out of flower, but finely in fruit; when the large mottled legumes present a very striking appearance.

5. *P. Nuttallii*, is P. densifolia, *Smith! in Rees, cyclop. &c.* (as we indeed

had suspected), and of *Hook.! ic. pl. t.* 282, *& bot. Beechey, suppl. p.* 334 (where it is by mistake called *P. densiflora*) excl. syn. P. canescens, *Nutt.* for which P. Nuttallii was doubtless meant). The leaflets are often narrower than in Hooker's figure, and not always emarginate.

7. *P. canescens* (Nutt.); not of *Hook. & Arn. bot. misc.*, a Chilian species; whence the name of Nuttall's plant may be changed to *P. leucopsis.*

10. *P. neglecta.*—The specimen of Astragalus Canadensis in the Linnæan herbarium marked 'H. U.' (Hortus Upsalensis) belongs to Phaca neglecta; but the specimens from Kalm are the proper A. Canadensis.

11. *P. astragalina.*—The Californian plant which we have alluded to under Astragalus leptocarpus, is considered by Hooker (*l. c.*) as a variety of P. astragalina, with smaller flowers and leaflets; but it will perhaps prove to be different when the fruit is known.

12. *P. elegans* (Hook.!)—P. parviflora, *Nutt.* does not differ from this.

14. *P. Aboriginorum* (Hook.), the Astragalus Aboriginorum of Richardson, should have been *A. aboriginum.* We had inadvertently adopted the name as given by Richardson without observing the grammatical error.

20. *P. podocarpa* (Hook. !)—Stem flexuous, rather rigid. Petioles rigid and somewhat persistent. Legumes when mature arcuate-curved, tumid; but the younger ones are quite flat as described.—A very singular species, which connects Phaca with Homalobus, if indeed it should not be referred to the second section of that genus; but the mature legumes are very tumid.

23. *P. parviflora* (Nutt.) is P. elegans, *Hook.*

26 (*a*). *P. macrodon* (Hook. & Arn.): erect, densely canescent-pubescent, at length rather glabrous; stem angled; leaflets 11–13 pairs, oblong-lanceolate, obtuse, apiculate, very slightly petiolulate; stipules small, lanceolate, acuminate, persistent; peduncles rather shorter than the leaves; racemes elongated, many-flowered; bracts subulate, membranaceous, as long as the pedicels; tube of the calyx oval; the teeth filiform-subulate, flexuous, as long as the tube, rather shorter than the corolla.—*Hook. & Arn. ! bot. Beechey, suppl. p.* 333.

California, *Douglas!*—A tall species. Leaves 6 inches long. Flowers apparently yellow, at first spreading, then reflexed; the corolla a good deal curved upwards. Calyx with singularly long and flexuous narrow teeth. Ovary linear, compressed, silky. *Hook. & Arn.*

26 (*b*). *P. leucophylla* (Hook. & Arn. l. c.), our Astragalus leucophyllus, *p.* 336, is more probably a Phaca. We have a nearly allied species, if not the same, from Oregon, in fruit only; with ovoid, pointed, thick and coriaceous legumes.

30. *P. mollissima.*—Add syn. Astragalus Purshii, *Dougl.! in Hook. fl. Bor.-Am.* 1. *p.* 152.

37. KENTROPHYTA, *p.* 353.

K. montana.—Interior of Oregon, *Douglas!* probably in the Rocky Mountains.

40. CHAPMANNIA, *p.* 354.—Add to the character:

Flowers of two kinds; the one kind complete but sterile; the others destitute of calyx, corolla, and stamens, but fertile. Style in the fertile flowers very short, incurved. Legume 1–3-jointed; the joints indehiscent, oblong, turgid, hispid, 1-seeded. Radicle straight.

Since our account of the genus was published, we have seen specimens with fertile flowers, and also the fruit. It is noticed by Mr. Bentham, in a paper on the Affinities and Structure of Arachis and Voandzeia, where he has given a detailed generic character.—We observed a specimen of this plant in a small collection made by the elder Bartram, in Georgia or Florida, now belonging to the British Museum.

43. DESMODIUM, *p.* 357–365.

10. *D. lævigatum* (Nutt.) proves, from the examination of an original specimen, to be the same with D. rhombifolium. Our notice of D. lævigatum should therefore be erased and the name adopted in place of D. rhombifolium.

48. BAPTISIA, *p.* 383–387.

14. *B. mollis* (Michx. under Podalyria): minutely pubescent, at length almost glabrous (not turning blackish in drying); leaves on rather slender petioles; leaflets cuneiform-oblong or oval-lanceolate; stipules foliaceous, lanceolate or oblong-ovate, the lower ones often as long as the petiole; the uppermost much smaller; racemes short, on short peduncles (flowers yellow); pedicels as long as the calyx, but rather shorter than the ovate or ovate-lanceolate persistent bracts, erect in flower; upper tooth of the calyx obtuse or emarginate; the others triangular-subulate; style much shorter than the ovary; immature legumes cylindrical, minutely pubescent, the stipe shorter than the calyx.—*Michx. fl.* 1. *p.* 264; *Nutt.! gen.* 1. *p.* 281. B. fraxinifolia, *Nutt.! mss.*

In Mecklenburg County, N. Carolina, *Michaux*. Near Salem, N. Carolina, *Schweinitz!* On the Catawba Ridge, in the same State, *Nuttall!*—We have drawn the above description from the specimens preserved in the herbarium of the Academy of Natural Sciences, Philadelphia, which we have recently had the opportunity of examining. We have scarcely a doubt that it is the Podalyria mollis of Michaux (a species which we were unable to identify when our account of the genus was printed, not having seen this plant), and it comes from the same region. Nuttall describes the stipules as small and linear-lanceolate; but this is only the case with the uppermost. The species should be placed next to B. alba and B. megacarpa, which agree with it in habit, and in not turning blackish when dry; from both of which it is distinguished by its foliaceous persistent stipules and bracts, the very acute teeth of the calyx, &c. The half-grown legumes are almost an inch long, and only about 3 lines in diameter.

66. VACHELLIA, *p.* 404.

1. *V. Farnesiana.*—Add syn. Farnesia odora, *Gasparini, descr. nuov. gen.* 1839, fide *Linnæa, suppl.* 1839.

After Vachellia, at the end of the order, the following note should be introduced:

LEPTOGLOTTIS, *DC. mem. Leg. p.* 451.—"Flowers polygamous. Calyx colored, 4-toothed, valvate in æstivation. Petals 4, strap-shaped, or none (perhaps caducous). Stamens 8: filaments distinct; in the lower flowers strap-shaped, flat and sterile; in the upper ones filiform, crisped, antheriferous. Style filiform. Legume

unknown.—An erect glabrous herb, armed with small uncinate prickles along the petioles and peduncles. Stipules subulate. Leaves bipinnate; the pinnæ 5–6 pairs; the leaflets numerous, oblong, mucronate, distinctly and singularly reticulated beneath with a few elevated anastomosing nerves. Peduncles axillary, an inch and a half long, solitary. Head globose. Flowers white.—" *L. Nuttallii.* —Arkansas, *Nuttall,* (in *herb. Mercier.*)" *DC.*—The plant thus described (after the publication of the second volume of the Prodromus,) is indicated either as a genus, or as a section of either Desmanthus or Schrankia, according as the fruit, when known, shall warrant. The plant is wholly unknown to us, and nothing agreeing with the description is to be found either among our specimens of Nuttall's Arkansas plants, nor in other collections from the same region. From the description of the leaflets, they would seem to resemble those of Schrankia uncinata. Our Desmanthus Jamesii is not prickly, and the leaflets not reticulated.

ORDER ROSACEÆ.

2. PRUNUS, *p.* 406–408.

3. *P. glandulosa.*—On receiving the letter-press of the 6th part of the *Icones Plantarum,* we perceive that Hooker has described this plant under the name of *Amygdalus glandulosa,* doubtless on account of its resemblance to A. microphylla, *H. B. & K.,* although the genus cannot be determined for want of the fruit, and it is not improbable that both plants belong to Prunus. Having examined an original specimen of Amygdalus microphylla, we may confidently state the Texan plant to be distinct from that species, although it much resembles it.

ORDER LOASACEÆ.

2. CEVALLIA, *p.* 536.

C. sinuata.—Add syn. *Hook. ic. pl. t.* 252. (Texas, *Berlandier.*) The 6th part of the *Icones Plantarum,* in which Hooker has figured this species, reached us after the foregoing sheets were printed. Sir William Hooker adopting the suggestion of Dr. Arnott, is inclined to refer the genus to Thymeleæ; an opinion which these distinguished botanists will probably reconsider, since they have recently described Gronovia as a Loasaceous plant (*Suppl. bot. Beechey, p.* 426), which genus accords with Cevallia in the 1-celled ovary, with a single suspended ovule. Hooker, like ourselves, found the seed destitute of albumen, although both Lagasca and Nuttall have described it otherwise.

ORDER CUCURBITACEÆ.

4 (*a*). DISCANTHERA.

Flowers monœcious. STERILE FL. Calyx obsolete. Petals 5, ovate, united at the base into a flattish nearly rotate corolla. Stamens (probably) 2: filaments very short, connate; the anthers forming a flat peltate disk, opening all round the even continuous margin; both the superior and the inferior surface (within the margin) furnished with a minute ciliate fringe. Disk and rudiment of the ovary none. FERTILE FL. Calyx produced beyond the ovary into a filiform tube; the teeth obsolete. Petals nearly as in the sterile flowers. Rudimentary stamens none. Disk none. Ovary 3-celled, with apparently about 6 erect or ascending ovules. Immature fruit ovoid (somewhat fleshy?), gibbous, densely echinate with weak prickles, at length 1-celled? Seeds 3–4 or 6, large, flat.—A slender trailing or climbing herb, with pedately dissected leaves, and simple tendrils. Flowers (white) very small; the sterile in filiform often somewhat compound racemes; the fertile ones solitary in the same axils, on short peduncles.

D. dissecta.

Texas, *Drummond!*—Plant nearly glabrous. Stem slender. Leaves ternately divided; the divisions attenuated and linear at the base, or petiolulate, the petiolules slightly margined; the terminal division 3-parted; the lobes irregularly toothed or sinuate; the middle one oblong, conspicuously mucronate; the lateral ones shorter, and often 2–3-lobed: lateral divisions 2-parted; the segments deeply 2–3-lobed, and sinuate-toothed. Sterile racemes as long as the leaves; the flowers (scarcely 3 lines in diameter) on short pedicels. The column consists of a very short flat filament (of 2 united), bearing a peltate flat disk, which probably is composed of 2 united anthers, opening by a continuous even line all around the margin, with no interruption to mark the points of connexion; neither is the anther in any degree tortuous, but the disk, after the pollen is shed, is slightly folded upwards: the anther is manifestly 2-celled: within the margin, both on the upper and lower side of the disk, is a circle of minute radiating ciliæ, borne apparently by the margin of a disk which is closely applied to the faces of the anther. Peduncle of the fertile flowers scarcely as long as the half-grown fruit. Ovary 3-celled; the cells probably disappearing during the growth of the fruit: style and stigmas not observed: ovules erect from near the base of the cell; the young fruit thickly clothed with long, weak, and soft smooth prickles. Seeds apparently large and flat, erect from near the base of the fruit.—This plant, which we have in Drummond's Texan collection, had escaped our notice until after our account of this family was printed. Our specimens are unfortunately somewhat incomplete. The genus belongs to the same division with Cyclanthera of Schrader (founded on a Mexican plant), with which it accords in the remarkable structure of the anthers, and in some other respects; it is also allied to Elaterium. This last genus appears to need revision, and some of the described species may be found to agree either with Discanthera or Cyclanthera. The fruit of Elaterium pubescens is 3-, or perhaps by suppression 2-celled, and the seeds erect as in the present plant. Does E.? hastatum, *H. B. & K.*, which is said to have minute campanulate-rotate flowers and a 6-seeded fruit, belong to the same genus with the plant here described?

Elaterium trifoliatum **(Linn. mantiss.) is founded on a description of a plant of Clayton's, which we did not find in his herbarium, and are unable to identify it by the characters given, unless it should be Sicyos angulatus. Clayton does not describe the leaves as trifoliolate, but as 3-lobed.**

ORDER CRASSULACEÆ.

1. TILLÆA, *p.* 557.

1. *T. minima.*—We have it also from Douglas's Californian collection.

ORDER SAXIFRAGACEÆ.

3. BOYKINIA, *p*. 576.

2. *B. occidentalis*.—Since the preceding sheets were printed, we have seen a fragment of Mr. Nuttall's *Saxifraga elata*, which proves to be a true Boykinia, only differing from B. occidentalis (as far as the imperfect specimen affords the means of comparison) in the brownish chaffy hairs which clothe the petioles and base of the stem, but which are, we suspect, deciduous. The flowers are in better state than those of our B. occidentalis. The turbinate-campanulate calyx is coherent with the ovary nearly to the base of the styles, which are not longer than the free portion of the tube; the teeth about one-third the length of the oblong-spatulate petals; the calyx in fruit urceolate. The stamens do not exceed the short calyx-teeth in length.

NOTE.—The name of Mr. Nuttall's genus Cristatella is changed by Endlicher (*gen. pl. p*. 891) to *Cyrbasium*, there being a prior Cristatella in Zoology; but this is not, in the present state of the science, a sufficient reason for the change.

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Obs.—The names of the *Orders* and *Suborders* are in full capitals: those of *Tribes*, *Subtribes*, *&c.* in small capitals: those of *admitted Genera* in Roman letters; of *synonymous Genera*, *&c.* in Italic: those of *Subgenera* or sections of Genera, in Roman letters spaced. Genera, &c. which are noticed or referred to, but not described, have the mark (†) prefixed.

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FLORA

OF

NORTH AMERICA.

EXOGENOUS OR DICOTYLEDONOUS PLANTS

CONTINUED.

SECTION II. MONOPETALOUS EXOGENOUS PLANTS.

Floral envelopes consisting of both calyx and corolla; the latter composed of united petals* (monopetalous or gamopetalous).

I. *Calyx adherent to the ovary* (*ovary inferior*).†

CONSPECTUS OF THE ORDERS IN THIS DIVISION.

* *Ovary with 2 or more cells, and 1–many ovules in each, or by abortion 1-celled. Stamens inserted upon the corolla. Seeds albuminous. Leaves opposite.*

Stipules none.	72. CAPRIFOLIACEÆ.
Stipules interpetiolar, or simulating the leaves.	73. RUBIACEÆ.
Stipules? 1 to 3 on each side, entirely similar to the leaves and forming with them a verticil.	*Subord.* STELLATÆ.
Stipules between the petioles.	
Ovary coherent.	*Subord.* CINCHONEÆ.
Ovary nearly free from the calyx.	*Subord.* LOGANIEÆ.

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* A few Ericaceæ, a portion of Plumbaginaceæ, some Aquifoliaceæ, &c., are polypetalous, or nearly so.

† In a few Rubiaceæ the ovary is partly, and in the suborder Loganieæ completely, free from the calyx: in some Dipsaceæ the apex of the ovary is coherent with the calyx, while the lower portion is free. On the other hand, one or two genera with an adherent calyx, such as Vaccinium, Hopea, and Halesia, belong to orders which have for the most part a free ovary.

* * *Ovary with a single cell and a solitary ovule, or rarely with 3 cells, two of which are empty. Seeds with little or no albumen. Fruit indehiscent.*

Stamens distinct. Seed suspended.	
Flowers not in involucrate heads. Albumen none.	74. VALERIANACEÆ.
Heads dense, involucrate. Seeds albuminous.	75. DIPSACEÆ.
Stamens syngenesious. Heads involucrate.	76. COMPOSITÆ.

* * * *Ovary with one or several cells, and numerous ovules. Stamens inserted with the corolla. Fruit capsular. Seeds mostly albuminous.*

Corolla irregular. Stamens united.	77. LOBELIACEÆ.
Corolla regular. Stamens mostly distinct.	78. CAMPANULACEÆ.
Corolla regular, 5-parted. Anthers sessile.	*Subord.* PONGATIEÆ.

ORDER LXXII. CAPRIFOLIACEÆ. *Juss.; DC.*

Tube of the calyx adherent to the ovary; the limb 5- (rarely 4-) cleft or toothed. Corolla tubular, or sometimes rotate; the lobes imbricate in æstivation. Stamens equal in number and alternate with the lobes of the corolla (or rarely one of them deficient), and inserted into the tube: anthers introrse, versatile. Ovary 3- (rarely 4–5-) celled, with 1–several pendulous ovules in each cell: style filiform, with a somewhat capitate stigma; or wanting, and the oblong stigmas 3–5. Fruit baccate, fleshy, or sometimes dry (rarely capsular), often 1-celled by abortion. Seeds anatropous. Embryo in the axis of fleshy albumen.—Shrubs, or rarely herbaceous plants, with opposite exstipulate leaves. Inflorescence various.

TRIBE I. LONICEREÆ. *R. Br.*

Corolla tubular; the limb sometimes irregular. Style filiform. Raphe on the outer side of the ovule!

Subtribe 1. CAPRIFOLIÆ.—Fruit baccate, or sometimes nearly dry. Testa of the seed crustaceous or coriaceous.

1. LINNÆA. *Gronov. in Linn. gen. no.* 774; *DC. prodr.* 4. *p.* 340.

Calyx-tube ovate; the segments of the 5-parted limb lanceolate-subulate, deciduous. Corolla turbinate-campanulate, somewhat equally 5-lobed. Stamens 4, didynamous, included, inserted towards the base of the corolla. Ovary 3-celled; two of the cells with several abortive ovules; the third with a single fertile ovule suspended from the summit. Style slightly exserted: stigma capitate. Fruit ovoid-globose, dry and indehiscent, 3-celled (the two sterile cells smaller), 1-seeded.—A creeping or trailing evergreen herb (indigenous to the northern parts of the old and new world), somewhat hairy;

with broadly oval sparingly crenate-toothed leaves, abruptly narrowed into a petiole. Peduncles filiform, terminating the ascending branches, bearing two pedicellate (minutely bibracteolate) nodding flowers. Corolla purplish-rose-color or nearly white.

L. borealis (Gronov.)—*Linn.! fl. Lapp. p.* 214, *t.* 12, *f.* 4, *fl. Suec. ed.* 2. *p.* 219 (*ic*), *& spec.* 2. *p.* 631; *Fl. Dan. t.* 3; *Schkuhr, handb. t.* 176; *Lam. ill. t.* 536; *Engl. bot. t.* 1297; *Michx.! fl.* 1. *p.* 87; *Wahl. fl. Lapp. p.* 170, *t.* 9, *f.* 3; *Pursh! fl.* 2. *p.* 413; *Torr! fl.* 1. *p.* 175; *Bigel.! fl. Bost. ed.* 2. *p.* 241; *Richards. appx. Frankl. journ. ed.* 2. *p.* 25; *DC.! l. c.*; *Hook.!* (*fl. Lond. n. ser. t.* 199) *fl. Bor.-Am.* 1. *p.* 285.

Moist mossy woods, usually under the shade of evergreens, from the Arctic Circle to the New England States! New York! New Jersey! (in a cedar swamp near New Durham, *Mr. L. Menard,*) and the mountains of Pennsylvania; and from Newfoundland! and Labrador! to the Rocky Mountains! Oregon! Unalaschka and Kotzebue's Sound! June–July.—Stems filiform, sending up numerous short branches. Leaves about half an inch long, sparsely hispid. Flowers fragrant; the slender pedicels, and particularly the calyx-tube and the appressed bracts, clothed with glandular hairs. Corolla hairy inside.—This unpretending and beautiful plant, so interesting from its association with the name of *Linnæus*, is as widely dispersed throughout the northern portion of the new, as of the old world.

2. SYMPHORICARPUS. *Dill. Elth. p.* 371. *t.* 278; *DC. prodr.* 4. *p.* 338.

Symphoria, *Pers.*

Calyx-tube globose; the limb 4–5-toothed, persistent. Corolla infundibuliform or campanulate, somewhat regularly 4–5-lobed. Stamens 4–5, inserted into the throat of the corolla. Ovary 4-celled; two of the cells with several abortive ovules; the two others (opposite) each with a single fertile ovule pendulous from the summit. Stigma capitate. Fruit a globose or ovoid berry, 4-celled; two opposite cells 1-seeded, the others empty. Seeds bony. —Small branching shrubs (natives of North America and Mexico); with oval entire leaves on short petioles. Flowers small, bibracteolate, in short axillary clusters or terminal spikes. Corolla rose-color or white. Berries red or white.

1. *S. racemosus* (Michx.): spikes terminal, loose, interrupted, often somewhat leafy; corolla campanulate, densely bearded inside; style (glabrous) and stamens included.—*Michx.! fl.* 1. *p.* 107; *DC.! l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 285. Symphoria racemosa, *Pers. syn.* 1. *p.* 214; *Pursh.! fl.* 1. *p.* 169; *Bot. mag. t.* 2211; *Lodd. bot. cab. t.* 230; *Bart. fl. Amer. Sept.* 1. *t.* 19; *Torr.! fl.* 1. *p.* 246. S. elongata & heterophylla, *Presl, in herb. Hænke?* ex *DC.*

Rocky banks of rivers (mostly on limestone), Upper Canada! Western part of New York! and Western States! to Oregon! and the North-West Coast! California, fide *Hook. & Arn. bot. Beechey.* Common also in cultivation. July–Aug.—A nearly glabrous shrub, 2–3 feet high, often surculose. Leaves oval or oblong, 1–2 inches long, sometimes a little pubescent; the margin often undulate. Spikes usually pedunculate; the flowers opposite. Corolla about 3 lines long, rose-color. Berries globose and roundish-obovate, very white, opaque when ripe, often half an inch in diameter.—*Snow-berry.*

2. *S. occidentalis* (R. Brown): spikes dense, terminal and axillary, nodding; corolla infundibuliform-campanulate, densely bearded within: stamens and (somewhat bearded) style exserted.—*R. Br. in Richards.! appx. Frankl. journ. ed.* 2. *p.* 6; *Hook.! l. c.*

Woody country of British America (*Richardson!*) and Saskatchawan (*Drummond!*) to the sources of the Mississippi, *Dr. Houghton!* and near Fort Gratiot, Michigan, *Dr. Pitcher!* Also Oregon, *Douglas.* (*Hook.*) June –July.—Shrub 1–4 feet high. Leaves ovate, 1–3 inches long, somewhat hairy above, pubescent underneath, rather obtuse; the petioles about one-third of an inch long. Spikes nearly sessile. Calyx-teeth minutely ciliate. Corolla purplish and white, larger than in the preceding, and the border more spreading. "Berries white, remaining on the plant during the autumn and winter." *Dr. Pitcher.*—*Wolf-Berry* of the Canadians.

3. *S. vulgaris* (Michx.): spikes axillary, almost sessile, capitate-glomerate; lobes of the campanulate corolla somewhat glabrous inside; stamens and (bearded) style included.—*Michx.! fl.* 1. *p.* 106; *DC.! l. c.* S. parviflora, *Desf. cat. hort. Par.* Lonicera Symphoricarpos, *Linn.! spec.* 1. *p.* 175. Symphoria conglomerata, *Pers. syn.* 1. *p.* 214. S. glomerata, *Pursh, l. c.*; *Nutt.! gen.* 1. *p.* 139; *Torr.! fl.* 1. *p.* 246.

Banks of rivers, Pennsylvania (*Muhlenberg*) Virginia! and mountains of the Southern States! to the Upper Missouri (*Nuttall! Dr. James!*) and Texas, *Drummond!* July–Sept.—Shrub 2–3 feet high, with erect purplish pubescent branches. Leaves about an inch and a half long, roundish-oval or ovate, mucronate, slightly hairy above, tomentose-pubescent beneath. Spikes much shorter than the leaves. Corolla 2 lines long, greenish-red; the tube bearded inside. Berries about the size of a small currant, dark red (bluish-purple, *Nutt.*).—*Indian Currant.*

4. *S. mollis* (Nutt.! mss.): "racemes very short, towards the summit of the branches, nearly sessile; corolla glabrous inside; calyx conspicuous; leaves oval or ovate, obtuse, pubescent, almost hoary and softly villous underneath.

"St. Barbara, California; common.—Nearly allied to the preceding; but with smaller leaves, larger flowers and a conspicuous calyx. Flowers reddish-white." *Nuttall.*

5. *S. ciliatus* (Nutt. mss.): "spikes very short, towards the summit of the branchlets; the terminal one pedunculate; corolla glabrous; leaves roundish-ovate, obtuse, pubescent underneath, ciliate.

"St. Barbara, California.—Flowers very small, reddish.—Considerably allied to S. vulgaris; but differs in the leaves being rounded at the base and ciliate." *Nuttall.*

3. LONICERA. *Linn.*; *Desf. fl. Atl.* 1. *p.* 183; *DC. prodr.* 4. *p.* 330.

Xylosteon, Caprifolium, Chamæcerasus, & Periclymenum, *Tourn.*

Calyx-tube ovoid or subglobose; the limb short, 5-toothed. Corolla tubular, infundibuliform or campanulate, often gibbous at the base; the limb 5-cleft, nearly regular, or ringent. Stamens 5. Ovary 2–3-celled, with several pendulous ovules in each cell. Stigma capitate. Berry 2–3-celled, or by obliteration 1-celled, few-seeded. Seeds crustaceous.—Climbing or erect shrubs. Leaves entire, often connate. Flowers axillary and pedunculate, or in sessile whorls or heads, often fragrant.—*Honeysuckle.*

§ 1. *Stem climbing: leaves often connate: flowers sessile, in verticillate-capitate clusters: berries never connate, often* 1-*celled when mature, crowned with the persistent limb of the calyx.*—CAPRIFOLIUM, Juss.

* *Corolla nearly regular.* (Periclymenum, *Tourn.*)

1. *L. sempervirens* (Ait.): leaves oblong and narrowly elliptical, glabrous above, glaucous and slightly pubescent underneath; the lower ones somewhat petioled; the upper connate-perfoliate; flowers in somewhat distant whorls; corolla trumpet-shaped, with short and broad nearly equal lobes.—*Ait. Kew.* (*ed.* 1) 1. *p.* 230; *Walt. Car. p.* 131; *Bot. mag. t.* 781, & 1753; *Bot. reg. t.* 556; *Torr.! fl* 1. *p.* 244; *DC. prodr.* 4. *p.* 432. Caprifolium sempervirens, *Michx.! fl.* 1. *p.* 105; *Pursh, fl.* 1. *p.* 160; *Ell. sk.* 1. *p.* 271.

Borders of swamps, Island of New York! to Georgia! Florida! and Louisiana! April–Oct. (in the Southern States.)—Stem twining over shrubs, or sometimes prostrate. Leaves 1½ to nearly 3 inches long; the upper 1–2 inches wide; the lower sometimes almost lanceolate. Peduncle 1–2 inches long: whorls 4–6-flowered. Flowers showy, inodorous; the corolla almost 2 inches long, slightly ventricose above, tapering gradually to the base, scarlet externally, yellowish within. Stamens a little exserted. Berries scarlet, about 4-seeded.—The wild plant, in the neighborhood of New York, remains in flower only a few weeks (May–June), and the leaves are deciduous; but in gardens, it blossoms nearly throughout the season, and the leaves are somewhat perennial, as is the case with the native plant in the Southern States.—*Scarlet Honeysuckle. Trumpet-Honeysuckle.*

2. *L. ciliosa* (Poir.): leaves ovate, glaucous beneath, conspicuously ciliate, or sessile and somewhat clasping; the uppermost connate-perfoliate; whorls of the subsessile spike approximate-capitate; corolla (deep yellow) somewhat equal; the tube hirsute, ventricose in the middle. *Pursh.* [teeth of the calyx conspicuous, *Nutt.! mss.*]—*Poir. dict.* 5. *p.* 612; *DC. prodr.* 4. *p.* 333. Caprifolium ciliosum, *Pursh! fl.* 1. *p.* 160.

Oregon; on the Kooskoosky, *Lewis!* and along the Oregon from the Falls to the sea, *Nuttall!*—We have seen the original specimens in Mr. Lambert's herbarium, but have not the means of completing the diagnosis between this and the following species. The flowers are bright yellow, according to Mr. Nuttall; who alone seems to have met with the plant, subsequently to Lewis.

3. *L. occidentalis* (Hook.): twining; leaves oval, nearly sessile, glabrous, ciliate, glaucous underneath; upper ones connate-perfoliate; flowers in verticillate heads; corolla (orange-red) glabrous; the tube elongated, gibbously inflated above the base; limb nearly equal; stamens somewhat included. *Hook. fl. Bor.-Am.* 1. *p.* 282. Caprifolium occidentale, *Lindl. bot. reg. t.* 1457.

About Fort Vancouver on the Oregon, *Douglas.*—This species is considered a great acquisition to the English gardens; the flowers are said to be full orange-red, and longer than in L. parviflora, hirsuta, &c. We do not find that Mr. Nuttall met with it, so as to compare it with the true L. ciliosa, to which it is doubtless allied.

* * *Corolla ringent; the upper lip 4-lobed or 4-toothed.* (Caprifolium, *Tourn.*)

† Natives of the United States and Canada.

4. *L. grata* (Ait.): stem twining; leaves obovate, glabrous, glaucous beneath; the lower ones contracted at the base; the two or three upper pairs connate-perfoliate; flowers (large) verticillate in the axils of the upper leaves or leaf-like connate bracts; tube of the corolla long and slender, not gibbous;

filaments glabrous.—*Ait. l. c.; Willd. spec.* 1. *p.* 984; *DC. prodr.* 4. *p.* 332; *Darlingt.! fl. Cest. p.* 159. Caprifolium gratum, *Pursh, fl.* 1. *p.* 161; *Ell. sk.* 1. *p.* 152.

Moist rocky woodlands, Pennsylvania (*Darlington!*) to Western Louisiana, *Dr. Hale!* "Mountains, New York to Carolina," *Pursh.* May.—"Stem 10 to 15 or 20 feet long, twining, or trailing unless supported; the young branches often quite pilose." *Darlington.* Leaves about 2 inches long, very obtuse, or with a short blunt point. Flowers about 6 in each whorl, very fragrant: the smooth corolla an inch and a half long, externally red or purplish; the limb (large) at first nearly white, soon turning to tawny yellow. Stamens exserted. Berries orange-red.—Very near the cultivated L. Caprifolium.

5. *L. albiflora*: twining or trailing; leaves (small and rather crowded) ovate, glabrous, glaucous beneath; the upper pair connate-perfoliate; the others distinct, sessile; flowers in small sessile heads; tube of the glabrous corolla slender, not gibbous; filaments glabrous.

Prairies near Fort Towson, on the Arkansas, *Dr. Leavenworth!*—Climbing over bushes and small trees. Leaves less than an inch long, rather rigid. Corolla "white," about three-fourths of an inch long; the lower lip oblong, scarcely half the length of the slender tube. Stamens somewhat exserted.—Apparently a very distinct species: the corolla, in shape, resembles that of L. grata.

6. *L. flava* (Sims): glabrous and somewhat glaucous; stem scarcely twining; leaves ovate, obovate, or oval, with a narrow cartilaginous margin; the upper pairs connate-perfoliate; the lowest distinct; flowers in small heads or approximate whorls; tube of the glabrous corolla slender, not gibbous; filaments glabrous.—*Sims, bot. mag. t.* 1318; *Torr. fl.* 1. *p.* 243; *DC. l. c.* Caprifolium Fraseri, *Pursh! fl.* 1. *p.* 160. C. flavum, *Ell. sk.* 1. *p.* 271.

β. more glaucous; the lower leaves abruptly narrowed at the base; tube of the corolla rather shorter and stouter.

Rocky banks of rivers, Cattskill Mountains, New York, *Pursh;* and Paris Mountains, S. Carolina, *Fraser.* Upper districts of Georgia, *Dr. Boykin!* *β.* Banks of the Scioto above Columbus, Ohio, *Mr. Sullivant!* Milwaukie, Wisconsin, *Mr. Lapham!* June–July.—Leaves 1½ to nearly 3 inches long, very glabrous above, glaucous and often with an extremely minute and soft whitish caducous pubescence beneath, obtuse, or with a blunt mucronate point. Flowers 8–12, in a subsessile or somewhat pedunculate head, or sometimes in two or three verticillate clusters, fragrant. Corolla bright yellow, an inch or rather more long (in *β.* less than an inch); the tube much longer than the somewhat ventricose limb, very slightly dilated near the base, but not gibbous; the lower lip narrowly oblong; the upper 4-lobed. Stamens exserted.—A beautiful species, which has long been cultivated in the European gardens.

7. *L. hirsuta* (Eaton): stem mostly twining; leaves (pale green, not shining) broadly oval, very veiny, ciliate, somewhat hairy above, softly villous beneath; the upper pair connate-perfoliate, often nearly glabrous; the others frequently petioled; peduncles mostly three together; the flowers in approximate capitate whorls; tube of the corolla viscid-pubescent, rather slender, slightly gibbous at the base; filaments sparsely hairy towards the base.—*Eaton! man. bot. ed.* 3. *p.* 341; *Torr.! fl.* 1. *p.* 242; *Bigel. fl. Bost. ed.* 2. *p.* 83; *Hook.! bot. mag. t.* 3163, *& fl. Bor.-Am.* 1. *p.* 282. L. villosa, *Muhl. cat. p.* 22, not of *DC.* L. pubescens, *Sweet, hort. Brit. p.* 194; *DC.! prodr.* 4. *p.* 332. L. Goldii, *Spreng. syst.* 1. *p.* 758. Caprifolium pubescens, *Goldie, in Edinb. phil. jour.* (1822) 6. *p.* 323: *Hook. exot. fl. t.* 27.

Rocky banks and margin of thickets, in damp soil, Canada! and Michigan! (around Lake Huron and Lake Superior!) and in the northern parts of New York! and the New England States! June–July.—Stem often twining to the height of 15–30 feet, with somewhat pubescent branches. Leaves 3–4 inches long, and 2–3 broad, membranaceous, conspicuously veiny, often somewhat rugose, sprinkled with scattered hairs above (some of which are usually a little glandular or viscid), conspicuously ciliate, often abruptly acute or slightly pointed at the base and apex; the upper surface nearly glabrous when old. Peduncles and even the ovaries often covered with a minute viscid or glandular pubescence, like that of the corolla. Flowers numerous, sulphur-yellow. Corolla hairy inside; the tube 6–8 lines long; the limb large and much expanded. Stamens and style exserted; the latter, like the filaments, more or less hairy below, sometimes hirsute. Berries orange, 3–5-seeded.

8. *L. parviflora* (Lam.): glabrous; stem trailing or twining; leaves elliptical or oblong, smooth, shining above, very glaucous beneath, with a slight often undulate cartilaginous margin; the upper pair connate-perfoliate; the others sessile and mostly somewhat connate; flowers in a more or less pedunculate head or 2–3 closely approximate whorls; corolla short, glabrous externally, gibbous at the base; filaments somewhat hairy below.—*Lam. dict.* 1. *p.* 728; *Torr.! fl.* 1. *p.* 245; *Bigel. fl. Bost. ed.* 2. *p.* 87; *DC.! prodr.* 4. *p.* 332; *Hook. fl. Bor.-Am.* 1. *p.* 282; *Darlingt.! fl. Cest. p.* 158. L. dioica, *Linn. syst.* (*ed.* 13) *p.* 181; *Ait. Kew.* (*ed.* 1) 1. *p.* 130; *Bot. reg. t.* 138. "L. media, *Murr. in comm. Gœtt.* (1776) *p.* 28, *t.* 3." Caprifolium glaucum, *Mœnch, meth. p.* 502. C. bracteosum, *Michx.! fl.* 1. *p.* 105. C. parviflorum, *Pursh! fl.* 1. *p.* 161. C. dioicum, *Rœm. & Schult. syst.* 5. *p.* 260.

β.? leaves pubescent or even somewhat villous-tomentose beneath: the lower ones distinct, sessile or slightly petioled; corolla pubescent.—L. parviflora *β. Hook. l. c.* L. Douglasii, *DC. l. c.* Caprifolium Douglasii, *Lindl. in hort. trans.* 7. *p.* 244. C. parviflorum, *Richards. appx. Frankl. journ. ed.* 2. *p.* 6, ex *Hook.*

Rocky banks of rivers, &c. Canada! (from Hudson's Bay to the Rocky Mountains, *α.* & *β. Hook.*) and from the New England States! to Missouri, and sparingly in the mountains of the Southern States. *β.* Saskatchawan &c., *Douglas.* Near Fort Gratiot, Michigan, *Dr. Pitcher!* On limestone cliffs along the Scioto &c. Ohio, *Mr. Sullivant!* May–June.—Stem 6–10 feet long. Leaves 2–3, or on young shoots even 4 inches long, sometimes with a slight and sparse deciduous pubescence beneath, but usually perfectly glabrous; the lower ones often narrowed at the base, but sessile. Corolla 8–9 lines long, including the short spreading limb, yellow tinged with dull purple. Stamens exserted. Berries orange.—In our var. *β.* from Ohio, the pubescence of the lower surface of the leaves is apparently deciduous, and in vigorous shoots they are often 4 or 5 inches long; the lower ones inclined to ovate-lanceolate. We have little doubt that this is the same with the Caprifolium Douglasii of Lindley (although we have never observed the leaves in the slightest degree ciliate), and it has the appearance of a distinct species: but our specimens from Fort Gratiot are exactly L. parviflora, except in the pubescence, and are doubtless the same as Hooker's plant, "which may be seen gradually passing into the usual glabrous appearance." The stamens and style are at first about the length of the corolla.

† † Natives of Oregon and California.

9. *L. Californica*: twining; branches glabrous, or sometimes hairy along one side; leaves ovate-oblong, glabrous, glaucous beneath, not ciliate; the uppermost connate-perfoliate; the others distinct, often slightly petioled;

flowers in rather distant whorls; the peduncle and rachis clothed with glandular and hispid hairs intermixed; tube of the corolla conspicuously gibbous, sparsely hairy, not longer than the deeply bilabiate limb; filaments somewhat hairy towards the base, exserted.—L. ciliosa, *Hook. & Arn. bot. Beechey, p.* 143, *& suppl.! p.* 349; not of *Poir.* (Caprifol. ciliosum, *Pursh.*)

Monterey, California, *Capt. Beechey;* and at St. Francisco? *Douglas!*—Leaves somewhat coriaceous, very pale or glaucous beneath, about 2 inches long; the lower ones obtuse at the base; the slight petioles furnished with stipuliform appendages. Corolla (including the limb) scarcely more than half an inch long, apparently pale yellow; the short tube with a prominent gibbosity on one side; lower lip linear, the upper with 4 very short rounded lobes. Ovaries glandular; the calyx-teeth inconspicuous.—We have not seen the specimens of the plant collected during Capt. Beechey's voyage, in which the younger branches are said to be hairy along one side: in our specimen from Douglas's Californian collection, the branches are glabrous; but the peduncles, &c. densely glandular and somewhat hirsute. It is certainly quite different from the Caprifolium ciliosum of Pursh, and from any other North American species.

10. *L. hispidula* (Dougl. mss.): stem slender, twining or trailing, hirsute or pilose-hispid; leaves rather rigid, ovate or cordate, obtuse, glaucous beneath, and villous-hirsute; the lower ones petioled; the uppermost sometimes connate-perfoliate; heads or whorls on slender peduncles; corolla nearly glabrous; the upper lip shorter than the gibbous tube; filaments slightly hairy below, exserted.—L. microphylla, *Hook. fl. Bor.-Am.* 1. *p.* 283 (without flowers), not of *Willd.* Caprifolium hispidulum, *Lindl.! bot. reg. t.* 1761.

Woods and rocky places, Oregon; on Mount Hood, and at the Grand Rapids of the Oregon, at 'Oak Point,' &c. *Douglas.* 'Oak Point,' on the Oregon near the Sea, *Nuttall!*—A small mostly trailing shrub, pubescent with slender scattered hairs. Leaves 6 to 10 lines, or sometimes an inch in length; the upper surface glabrous, and the one or two upper pairs often connate-perfoliate, in the cultivated plant. Flowers small, rose-color, nearly scentless. Corolla about half an inch long. Ovary glabrous. Calyx-teeth minute.—According to the description and figure in the Botanical Register, the tube of the corolla is twice the length of the limb; but in our specimen (from the Horticultural Society's Garden) the linear lower lip of the corolla is quite as long as the tube. In the wild plant, the leaves are about three-fourths of an inch in length, according to Mr. Nuttall; but the upper ones often smaller.

11. *L. subspicata* (Hook. & Arn.): erect and much branched; the branches, lower surface of the leaves, and corolla pubescent; leaves (small) all distinct, elliptical or oblong, obtuse, coriaceous, shining above, paler beneath, on very short petioles; spikes few-flowered, bracteate; corolla bilabiate; 'one lip 2-, the other 3-cleft.'—*Hook. & Arn. bot. Beechey, suppl. p.* 349.

California, *Douglas.* Bushy hills near St. Barbara, *Nuttall.*—"An erect bush, about 3 feet high; with glandularly pubescent leaves, small pale pink flowers, and a minute calyx." *Nutt. mss.*—Leaves about an inch long, passing into opposite remote pairs of bracts, having in their axils lesser bracteas, which bear the flowers solitary or in pairs. Corolla not half an inch long. The aspect different from any other Lonicera. *Hook. & Arn.*

§ 2. *Leaves never connate: peduncles axillary, 2–4-bracteate and 2- (rarely 3-) flowered at the summit: berries geminate, distinct or often united, 2–3-celled; the limb of the calyx deciduous.*—XYLOSTEON, Juss.

* *Peduncle 4-bracteate at the summit; the bracts foliaceous and dilated.*

12. *L. involucrata* (Herb. Banks.): stem erect or reclined; branches prominently 4-angled; leaves ovate-oblong or oval, petioled, obtuse or acuminate, hirsute-pubescent beneath; peduncles shorter than the leaves, 2–3-flowered; exterior bracts ovate or subcordate; the interior broadly obovate or obcordate, at first very small, at length many times larger than the distinct ovaries and enclosing the fruit; corolla pubescent, gibbous at the base on the outside.—*Spreng. syst.* 1. *p.* 759; *DC. prodr.* 4. *p.* 336; *Lindl. bot. reg. t.* 1179; *Hook.! fl. Bor.-Am.* 1. *p.* 284. L. Ledebourii, *Eschs. in mem. acad. St. Petersb.* 10. *p.* 284; *DC. l. c.*; *Cham. & Schlecht. in Linnæa*, 3. *p.* 138; *Hook. & Arn.! bot. Beechey*, *p.* 143, *& suppl. p.* 349. Xylosteon involucratum, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 6.

Saskatchawan! (and woody country from lat. 54° to 64°) and Rocky Mountains, to the North West Coast between lat. 54° & 56°. Also in California, *Eschscholtz*, *Douglas! Nuttall!*—Stem 2–10 feet long, "often supported by other plants." (*Nutt.*) Leaves 2–3 inches long, on petioles 2–4 lines in length, usually with a short acuminate point. Corolla yellowish, 6–7 lines long, pubescent and glandular, cylindraceous; the lobes short. Stamens included. Stigma mostly somewhat exserted. Bracts somewhat pubescent and glandular; the exterior often nearly half an inch in length: the interior at first very small, but becoming large and conspicuous in fruit, each consisting of two partially united and overlapping bracts.

* * *Peduncle minutely 2-bracteolate at the summit.*

13. *L. ciliata* (Muhl.): stem erect; leaves ovate-oblong, often cordate, pilose-ciliate, the younger ones villous beneath; peduncles shorter than the leaves; bracts shorter than the ovaries; teeth of the calyx very obtuse; corolla obtusely saccate at the base; the lobes short and somewhat equal; style exserted; berries distinct, diverging.—*Muhl. cat. p.* 22; *DC.! prodr.* 4. *p.* 335; *Hook.! fl. Bor.-Am.* 1. *p.* 283. L. Canadensis, *Rœm. & Schult. syst.* 5. *p.* 260. Xylosteum Tartaricum, *Michx.! fl.* 1. *p.* 106. (not L. Tartarica, *Linn.*) X. ciliatum, *Pursh! fl.* 1. *p.* 161 (excl. *β.* album, which is Symphoricarpus racemosus, fide *Nutt.*); *Torr.! fl.* 1. *p.* 245; *Bigel.! fl. Bost. ed.* 2. *p.* 88.

Rocky woods and hill-sides, throughout Canada (from the Saskatchawan), and the northern portions of the New England States! New York! Pennsylvania and Ohio! May.—Shrub 3–5 feet high, with sparing straggling branches. Leaves membranaceous, light green, 1–2 or more inches long, rather acute: petioles short, beset with a few bristly hairs. Corolla pale greenish-yellow, somewhat funnel-form, about three-fourths of an inch long. Filaments glabrous. Berries ovoid, red, about one-fourth of an inch long, 3–5-seeded.

14. *L. cærulea* (Linn.): stem erect; leaves oval or oval-oblong, hirsute on both surfaces, nearly or quite glabrous above when old; peduncles very short, reflexed in fruit; bracts subulate, longer than the ovaries; corolla gibbous at the base; the lobes short, nearly equal; berries (deep blue and glaucous) globose, formed by the union of 2 ovaries.—*Linn. spec.* 1. *p.* 174; *Pall. fl. Ross. t.* 37; *Bot. mag. t.* 1965; *DC. prodr.* 4. *p.* 337; *Hook.! fl. Bor.-Am.* 1. *p.* 283. L. cærulea Canadensis, *Lam. dict.* 1. *p.* 731, ex *DC.* L. villosa, *DC.! l. c.* (excl. syn. *Goldie*, *Torr. &c.*); *Hook. & Arn.! bot. Beechey*, *p.* 115. Xylosteum Solonis, *Eaton! man. bot. p.* 518. X. villosum, *Bigel.! fl. Bost. ed.* 2. *p.* 88; *Torr.! fl.* 1. *p.* 245 (excl. syn. *Gold. & Muhl.*); *Richards.! appx. Frankl. journ. ed.* 2. *p.* 6.

β. villosa: branches and both surfaces of the leaves densely villous-tomentose; limb of the calyx mostly ciliate.—L. velutina, *DC.! l. c.* Xylosteum villosum, *Michx.! fl.* 1. *p.* 106.

Woods and on rocks, Labrador! and Newfoundland! to the Rocky Mountains in British America, and north to lat. 66°, extending south to the mountains or mountainous districts of Massachusetts! and New York! β. Hudson's Bay, *Michaux!* Newfoundland, *Pylaie!* May.—Shrub 1–4 feet high; the younger branches mostly villous. Leaves an inch or less in length. Corolla yellow, about half an inch long, either glabrous or hairy, longer than the peduncles; the lobes longer than the tube, oblong, erect. Stamens scarcely exserted: filaments bearded.—We fully agree with Hooker, in considering our plant identical with the L. cærulea of Europe and Siberia.

15. *L. oblongifolia* (Hook.): stem erect, much branched; leaves oblong or oval, velvety-pubescent when young, at length almost glabrous; peduncles filiform, erect, much longer than the flowers; bracts obsolete; corolla gibbous at the base, deeply bilabiate; berries (purple) globose, formed by the union of 2 ovaries.—*Hook.! fl. Bor.-Am.* 1. *p.* 284, *t.* 100. L. villosa, *DC.! l. c.* partly. Xylosteum oblongifolium, *Goldie, in Edinb. phil. jour.* 6. *p.* 323.

Sphagnous swamps, Canada, *Mr. Goldie, Drummond!* Northern and Western parts of the State of New York! May–June.—Shrub 3–4 feet high. Leaves 1–2 inches long, slightly petioled. Peduncles about an inch long. Corolla half an inch long, greenish-yellow; tinged with purple internally: the lower lip oblong-linear, often spreading; the upper erect, with 4 short lobes. Filaments nearly glabrous, not exceeding the corolla: anthers linear. Style hairy. Berries about the size of a large pea, marked with the vestiges of the two approximated calyces.

4. DIERVILLA. *Tourn. in act. acad. Par.* (1706) *t.* 7. *f.* 1.; *Linn. hort. Cliff. t.* 7; *Lam. ill. t.* 105; *Sieb. & Zucc. fl. Japon. p.* 68. *t.* 29–32.

Weigela, *Thunb.*—Calysphryum, *Bunge.*—Diervilla & Weigela, *Alph. DC.*

Calyx-tube oblong or cylindrical, often attenuated at the summit; the segments of the 5-parted limb linear or subulate. Corolla infundibuliform; the limb 5-cleft, nearly regular or slightly bilabiate. Stamens 5. Ovary 2-celled, crowned with an oblong epigynous gland: stigma peltate-capitate. Fruit capsular, membranaceous or crustaceo-coriaceous, 2-celled, 2-valved, septicidal; the 2-lobed placentæ usually strongly projecting into the cells, each bearing numerous seeds in a double series. Seeds with a scrobiculate testa, naked or cristate.—Shrubs (natives of North America, Japan, and Northern China). Leaves ovate or oblong, mostly petioled, serrate, acute, deciduous. Peduncles axillary or terminal, 1-flowered or cymosely 3–7-flowered; the central flower frequently sessile; all bibracteate at the base.

The Asiatic species have been admirably illustrated by Zuccarini, in the work cited above. These all have a somewhat indurated capsule, and the seeds ('testa membranaceous,' *Zucc.*) furnished with a crest or slight wing; and the flowers are inclined to be rose-color or purple. They form a marked section, at least, which should retain Thunberg's name, *Weigela.* The latter was united to Diervilla by Brown (who first pointed out the mistake into which Thunberg had fallen), and in this he is followed by Zuccarini: while Alphonse De Candolle (*Note sur le genre Weigela*, etc. in the *Bibliothèque Universelle de Genève.* Jan. 1839) not only retains that genus, but divides it into two sections; and this even without being acquainted with the fruit and seeds of the Asiatic plants, which furnish the most obvious distinctions. We know not whether Mr. Brown was acquainted with these differences when he united Weigela to Diervilla, or whether he would consider them of generic importance. It must be remarked that both the elder and the younger De Candolle have, by some misapprehension, described the capsule of Diervilla as one-celled or half 2-celled; while Jussieu and some other botanists consider it 4-celled, an easy mistake, since the placentæ often reach nearly or quite to the back of each cell.

§ *Flowers yellowish: capsule membranaceous: seeds not furnished with a crest or wing; the testa crustaceous.*—DIERVILLA proper.

1. *D. trifida* (Mœnch): leaves oblong-ovate, acuminate, on short petioles, glabrous, or somewhat hairy on the veins beneath; peduncles 1–3-(mostly 3-)flowered; capsule attenuate at the summit, crowned with the subulate-setaceous teeth of the calyx.—*Mœnch, meth. p.* 492. D. Acadiensis fruticosa &c. *Tourn.; Duham. arb.* 1. *t.* 87. D. Tournefortii, *Michx.! fl.* 1. *p.* 107; *Torr.! fl.* 1. *p.* 238. D. humilis, *Pers. syn.* 1. *p.* 214. D. Canadensis, *Willd. enum.* 1. *p.* 222; *Bigel.! fl. Bost. ed. p.* 69; *DC.! prodr.* 4. *p.* 330; *Hook.! fl. Bor.-Am.* 1. *p.* 281; *Darlingt.! fl. Cest. p.* 157. D. lutea, *Pursh! fl.* 1. *p.* 162. Lonicera Diervilla, *Linn.! mat. med. p.* 62, *& spec.* 1. *p.* 175.

β. leaves nearly sessile, rather obscurely serrate.

Rocky woods, Canada! and from Newfoundland! and Hudson's Bay to the Rocky Mountains. Northern and Middle States! and along the higher mountains to Carolina. β. On the Black Mountains, North Carolina, *Mr. M. A. Curtis!*—May–June. Stem 2–4 feet high, branched. Leaves 2–4 inches long. Peduncles from the axils of the upper leaves, rather longer than the petioles: the central flower sessile, the lateral ones pedicellate. Bracteoles subulate, shorter than the ovary. Corolla greenish-yellow, about three-fourths of an inch long, somewhat irregular; the lobes oblong. Stamens and style exserted. Capsule ovoid-oblong, slightly angled, appearing almost 4-celled by the projection of the placentæ; the summit tapering abruptly into a long and narrow neck, and crowned with the apparently persistent teeth of the calyx.—*Bush-Honeysuckle.*—We should have hardly ventured, perhaps, to restore the prior name of Mœnch (although it is a very good one), had we found any thing like uniformity among botanists in the adoption of some one among the later names.

Subtribe 2. TRIOSTEÆ.—Fruit drupaceous; the endocarp bony. Testa of the seed membranaceous.

5. TRIOSTEUM. *Linn.; Gærtn. fr. t.* 26; *Lam. ill. t.* 150.

Calyx-tube ovoid; the segments of the 5-parted limb linear-lanceolate, foliaceous, persistent. Corolla tubular, gibbous at the base, somewhat equally 5-lobed, a little longer than the calyx. Stamens 5, included. Ovary 3-(rarely 4–5-) celled, with a single anatropous ovule suspended from the summit of each cell: style included: stigma capitate, somewhat 3-lobed. Fruit drupaceous, rather dry, roundish-obovoid, obscurely 3–(5-) sided, containing as many ribbed elliptical bony nucules. Testa membranaceous. Embryo minute, oblong, in the axis of fleshy albumen.—Perennial herbaceous or rarely suffrutescent plants (natives of the United States and the mountains of Middle Asia); the lanceolate or oval entire leaves narrowed and somewhat connate at the base. Flowers axillary and sessile or nearly so, solitary or

clustered; or rarely (by the reduction of the leaves) verticillate in a terminal raceme.

1. *T. perfoliatum* (Linn.): stem hirsute with rather soft viscous hairs; leaves ovate or oval, acuminate, abruptly narrowed at the base, velvety-pubescent beneath, somewhat hairy above; flowers (dull brownish-purple) sessile and mostly clustered in the axils.—*Linn. spec.* 1. *p.* 176; *Pursh, fl.* 1. *p.* 162; *Bigel. med. bot.* 1. *p.* 90, *t.* 19; *Bart. veg. mat. med. t.* 4; *Ell. sk.* 269; *DC.! l. c. Torr.! fl.* 1. *p.* 245; *Sweet, Brit. fl. gard.* (*ser.* 2) *t.* 45; *Darlingt. fl. Cest. p.* 159. T. majus, *Michx.! fl.* 1. *p.* 107. Triosteospermum, *Dill. Elth. t.* 293, *f.* 378.
Shady rocky places, in rich soil, throughout the Northern, Middle, and Western States! and along the mountains of the Southern States. May–July.—Root thick and fleshy. Stem 2–4 feet high, stout, simple. Leaves 4–7 inches long, 2–4 wide, sometimes narrowed into a winged petiole, but always connate at the base, often nearly glabrous above. Bracts linear. Corolla 8–10 lines long (about the length of the calyx-segments), viscidly pubescent; the lobes rounded. Filaments hairy. Style slender. Fruit half an inch long, pubescent, orange-color (not purple when mature, as described by Pursh, Barton, & DC.), crowned with the foliaceous spreading limb of the calyx: nucules marked with 3 strong ribs and 4 grooves on the back, and with 2 grooves and a central projection on the face.—The leaves are sometimes more or less sinuate, which is noticed by De Candolle: we have seen Pennsylvanian specimens of this form in the herbarium of the late Mr. Schweinitz. The root is reputed to be emetic and cathartic, and the plant is well-known in the popular materia medica, under the name of *Horse-Gentian*, *Fever-wort*, or *Wild Coffee*.

2. *T. angustifolium* (Linn.): stem hispid; leaves lanceolate or oblong, acuminate, tapering to the base, pubescent or almost glabrous beneath, hirsute above; the flowers (ochroleucous) mostly solitary in the axils, sessile or somewhat pedunculate.—*Linn.! spec.* 1. *p.* 176 (*pl. Gronov.!*); *Vahl. symb.* 3. *p.* 37; *Pursh, l. c.*; *Ell. l. c.*; *DC.! prodr.* 4. *p.* 330. T. minus, *Michx.! l. c.* Periclymenum herbaceum, &c. *Pluk. alm. p.* 287, *t.* 104, *f.* 2.
Shady places, Virginia! and North Carolina! to Louisiana! Arkansas! and Missouri! May–June.—A smaller species than the preceding, with the lobes of the ochroleucous corolla deeper in proportion, the tube less gibbous at the base, &c. It probably has the same properties as T. perfoliatum, and bears the same popular names. Plukenet received it under the name of *Dr. Tinker's-weed.*

TRIBE II. SAMBUCEÆ. *Kunth.*

Corolla regular, rotate, or rarely somewhat tubular. Stigmas 3–5, nearly sessile. Endocarp of the fruit crustaceous or coriaceous. Testa of the seed membranaceous; the raphe occupying the inner side.

6. SAMBUCUS. *Tourn.*; *Linn.*; *Gærtn. fr. t.* 27; *Lam. ill. t.* 211.

Limb of the calyx small, 5-cleft, at length obsolete. Corolla rotate or urceolate, 5-cleft; the lobes obtuse. Stamens 5. Fruit baccate, pulpy, subglobose: nucules 3 (rarely 5), crustaceous, oblong, rugulose, obtusely angled on the back, nearly plane on the face, each containing a suspended seed.—Shrubs or perennial herbs, with a heavy odor. Leaves pinnate or 1–2-pinnately divided; the leaflets or divisions serrate or incised, often pseudo-stipellate, or with 2 glands at the base of each pair. Cymes compound, thyrsoid or fastigiate. Flowers white, or sometimes reddish.—*Elder.*

Gærtner, and most subsequent botanists, except Kunth, have described the fruit of this genus as a proper berry; the nucules being taken for seeds. [illegible]

1. *S. pubens* (Michx.): stem shrubby; leaves pinnately 5–7-foliolate; leaflets ovate-lanceolate, acuminate, the lower surface and the petioles pubescent; thyrsus ovoid or pyramidal, rather loose.—*Michx.! fl.* 1. *p.* 181; *Torr.! fl.* 1. *p.* 321; *DC.! prodr.* 4. *p.* 323; *Bongard! veg. Sitcha, in mem. acad. St. Petersb.* (*ser.* 6) 2. *p.* 144. S. pubescens, *Pers. syn.* 1. *p.* 328; *Pursh, fl.* 1. *p.* 204; *Ell. sk.* 1. *p.* 368. S. racemosa, *Hook.! fl. Bor.-Am.* 1. *p.* 279.

β. *leucocarpa:* berries white.

γ. *arborescens:* large; leaflets 7–9, the serratures longer and narrower; anthers large.—S. arborescens, *Nutt.! mss.* S. racemosa β. *Hook.! l. c.*

Rocky woods &c. Canada! from the Saskatchawan, and Northern States! to the mountains of Carolina! West to the Rocky Mountains, Oregon! and Sitcha, (chiefly var. γ.) β. Cattskill Mountains, *Mr. J. Hogg!* May; the fruit mature in June and July.—Stem 2–10 feet high, sometimes attaining the diameter of 3 or 4 inches at the base; the branches often warty. Leaves very pubescent when young, seldom stipellate. Thyrsus about 3 inches long. Berries scarlet.—Hooker, perhaps with good reason, unites this species with the S. racemosa of Europe, &c. We have occasionally found this plant arborescent, and at least 18 feet high.

2. *S. Canadensis* (Linn.): stem suffrutescent; leaves pinnately 7–11-foliolate; leaflets oblong or oval, acuminate, glabrous, somewhat pubescent on the midrib; the lower ones often 3-parted; cymes spreading, loose, 5-parted. —*Linn.! spec.* 1. *p.* 269; *Michx.! fl.* 1. *p.* 281; *Pursh, fl.* 1. *p.* 203; *Ell. sk.* 1. *p.* 368; *Torr.! fl.* 1. *p.* 321: *DC.! prodr.* 4. *p.* 322; *Hook. fl. Bor.-Am.* 1. *p.* 279; *Darlingt. fl. Cest. p.* 205. S. nigra, *Marsh. arbust. p.* 141. S. humilis, *Raf. ann. nat. p.* 13.

Thickets and along fences, in rich soil, throughout the United States! and Canada! June–July.—Stem 5–10 feet high, stout, filled with pith. Leaflets not unfrequently furnished with foliaceous stipellate appendages. Cymes flat, 5–8 inches in diameter; the flowers pure white. Berries small, dark purple, or nearly black when mature; the juice deep crimson.—Near S. nigra of Europe.—*Common Elder.*

3. *S. glauca* (Nutt.! mss.): "somewhat arborescent, glabrous; leaves pinnate; leaflets 3–5 pairs, lanceolate, acuminate, sharply serrulate, undivided; cyme large and spreading; fruit (black) very glaucous.

"Plains of the Oregon, near the Blue Mountains: common.—Berries resembling in taste those of S. Canadensis, to which this species is allied. *Nuttall.*—We can scarcely distinguish this species from S. Canadensis.

7. VIBURNUM. *Linn.; Gærtn. fr. t.* 27; *DC. prodr.* 4. *p.* 323.

Limb of the calyx 5-toothed. Corolla rotate, sometimes somewhat tubular or campanulate, 5-lobed. Stamens 5. Ovary 1–3-celled; one of the cells containing a single suspended ovule, the others abortive: stigmas 3, sessile. Fruit drupaceous, 1-celled, 1-seeded, with a thin pulp; the endocarp (seed of most authors) crustaceous, mostly compressed. Seed conformed to the cavity of the endocarp; the testa membranaceous. Embryo minute at the extremity of the fleshy albumen.—Shrubs or small trees, with petioled undivided or lobed leaves. Petioles sometimes furnished with appendages exactly similar to stipules. Flowers white, in terminal cymes; the marginal ones sometimes sterile and radiant.

§ 1. *Flowers all similar and fertile: corolla rotate.*—LENTAGO, DC.

* *Leaves entire, serrate, toothed.*

1. *V. nudum* (Linn.): leaves somewhat coriaceous, oval, oblong, or lanceolate, dotted beneath with brownish scales, glabrous above; the margin crenulate or entire; petiole somewhat margined; cymes pedunculate; fruit ovoid.

α. Claytoni: leaves broadly oval, oblong-obovate, or oblong, obtuse or slightly acuminate, entire or obscurely crenulate; the veins rather prominent beneath.—V. nudum, *Linn.! spec.* 1. *p.* 268 (*pl. Gronov.!*); "*Mill. ic. t.* 274;" *Willd.! spec.* 1. *p.* 1487; *Michx.! fl.* 1. *p.* 178; *Bot. mag. t.* 2281; *Ell. sk.* 1. *p.* 375; *Torr.! fl.* 1. *p.* 319; *Bigel. fl. Bost. ed.* 2. *p.* 116; *DC.! prodr.* 4. *p.* 325; *Darlingt. fl. Cest. p.* 203. V. squamatum, *Wats. dendr. Brit. t.* 24?

β. angustifolium: leaves lanceolate and oblong-lanceolate, often acute, entire or obscurely crenulate-denticulate, the veins slightly prominent beneath.—V. nitidum, *Ait. Kew.* (*ed.* 1) 1. *p.* 371? V. pyracanthifolia, *Schwein.! herb.*

γ. cassinoides: leaves ovate, slightly obovate, or oblong, often abruptly acuminate, the margins crenate-serrate or undulate; the veins not prominent beneath.—V. cassinoides, *Linn.! spec. ed.* 2. *p.* 384 (excl. syn. except of *Duham.*); *Pursh, fl.* 1. *p.* 202; *DC.! prodr.* 4. *p.* 326; not of *Michx.* V. nudum, *Hook.! fl. Bor.-Am.* 1. *p.* 279. V. pyrifolium, *Pursh, l. c.*; *Torr.! fl.* 1. *p.* 318; *Bigel. l. c.*; not of *Poir.*, *Desf.* & *DC.* V. squamatum, *Willd.! enum.* 1. *p.* 327; "*Wats. dendr. Brit. t.* 24."

Swamps, *α.* Massachusetts and Southern part of New York! to Florida! and Louisiana. *β.* North Carolina! to Georgia! and New Orleans! *γ.* Northern portion of Pennsylvania and New York! to Canada! Saskatchawan, and Newfoundland! May–June.—Stem 6–12 feet high; the bark ash-gray. Leaves variable in form, size &c. on the same individual, usually 2–4 inches long, turning blackish in drying; the lower surface at first clothed with scaly dots, the upper at length somewhat shining. Cyme as large as in the *Laurustina* (V. Tinus): peduncle 1–2 inches long. Fruit about 3½ lines long, slightly compressed, dark blue, with a glaucous bloom, pointed, sweetish and edible when ripe; the nucleus or stone (seed of some authors) much compressed, slightly convex on one side, and with a shallow groove on the other.—Our var. *β.* is only a narrow-leaved form of V. nudum: the more northern plant (var. *γ.* which is the original V. cassinoides) appears somewhat different; but we can find no permanent characters by which to distinguish it.

2. *V. prunifolium* (Linn.): leaves roundish-oval, broadly ovate or obovate, coriaceo-membranaceous, obtuse or with a slight abrupt point, finely serrate with appressed or uncinate teeth, glabrous; petiole with a slight and even margin; cymes sessile; fruit oblong-ovoid.—*Linn.! spec.* 1. *p.* 268; *Michx.! fl.* 1. *p.* 178; *Pursh, fl.* 1. *p.* 201; "*Duham. arb.* (*ed. nov.*) 2. *t.* 38; *Wats. dendr. Brit. t.* 23;" *Ell. sk.* 1. *p.* 365; *Torr.! fl.* 1. *p.* 318; *Guimp., Otto, & Hayne, holz. t.* 101; *Hook. l. c.*; *Darlingt. l. c.* V. Canadense glabrum, *Vaill.!* V. pyrifolium, *Poir. dict.* 5. *p.* 658; *Desf. cat. hort. Par. ed.* 3. *p.* 404; *DC.! prodr.* 4. *p.* 325. Mespilus prunifolia Virginiana &c. *Pluk. alm. t.* 46, *f.* 2.

β. ferrugineum: lower surface of the petiole and midrib when young covered with reddish-brown wool.

Dry woods and thickets, Canada? and Southern part of New York! and Pennsylvania! to Georgia. *β.* N. Carolina! and Georgia! to Louisiana! and Arkansas! May.—Shrub or tree 8–20 feet high, with numerous abortive branches or spurs. Leaves 1 to nearly 3 inches long, mostly rounded; the petiole more distinctly margined in the upper than in the lower leaves, about half an inch long; in var. *β.* clothed with deciduous reddish pubescence or tomentum, which consists of chaff-like laciniate scales rather than proper hairs. Cyme about 3 inches in diameter. Fruit nearly half an inch long (in *β.* more roundish than in the northern plant), bluish-black when ripe, glaucous, compressed: the nucleus much compressed.—*Black Haw. Sloe.*

3. *V. Lentago* (Linn.): leaves ovate, conspicuously acuminate, finely serrate with sharp slightly uncinate teeth, somewhat membranaceous, glabrous; the lower surface and particularly the midrib and (undulate) margined petioles dotted with minute scales when young; cymes sessile; fruit oval.—*Linn.! spec.* 1. *p.* 268; *Michx.! fl.* 1. *p.* 178; *Ell. sk.* 1. *p.* 365; *Wats. dendr. Brit. t.* 21; *Torr.! fl.* 1. *p.* 318; *Bigel. fl. Bost. ed.* 2. *p.* 116; *DC.! prodr.* 4. *p.* 325; *Hook. l. c.*; *Darlingt. fl. Cest. p.* 325.

Woods and banks of streams, Canada! (from the Saskatchawan) and throughout the Northern States! to Kentucky! and the mountains of Georgia. May.—Tree 15–20 feet high. Leaves usually broadly ovate or oval, about 3 inches long, sometimes slightly cordate; the petiole 6–8 lines long, sometimes covered, as well as the midrib, with rusty scales. Cymes widely spreading. Fruit somewhat compressed, half an inch long, bluish-black when ripe, with a glaucous bloom; the pulp thin and sweetish: nucleus broadly oval, nearly flat on both sides.

4. *V. obovatum* (Walt.): leaves obovate or cuneate-obovate, (small) glabrous, somewhat coriaceous, shining above, mostly obtuse, entire, or often acutely denticulate above the middle; cymes sessile; fruit ovoid-globose, shining.—*Walt. Car. p* 116; *Poir. dict.* 5. *p.* 658; *Pursh, fl.* 1. *p.* 201; *Ell. sk.* 1. *p.* 366; *Lodd. bot. cab. t.* 1476; *DC.! prodr.* 4. *p.* 326. V. cassinoides, *Mill. dict. no.* 9? (not of *Linn.*); *Willd.! spec.* 1. *p.* 1491 (excl. syn.), *& enum. p.* 327; *Michx.! fl.* 1. *p.* 179. V. lævigatum, *Ait. Kew.* (*ed.* 1.) 1. *p.* 371; *Willd. spec.* 1. *p.* 1492, *& enum. l. c.*; *Pursh, fl.* 1. *p.* 202; *Ell. sk.* 1. *p.* 367; *DC. l. c.*

Shady banks of rivers, &c. Virginia to Georgia! and Florida! April–May.—Shrub 2–8 feet high, with numerous branches, which are dotted when young with minute scales. Leaves 1–1½ inch long, and 3–8 lines wide, on short petioles, often minutely dotted beneath; those of the flowering branches mostly entire; those of the sterile branches frequently acute and sharply denticulate or toothed. Cymes small. Fruit about one-third of an inch long, apparently not glaucous, black, sweetish.—Readily distinguished by its small shining leaves, small and somewhat simple cymes, &c.

5. *V. ellipticum* (Hook.); leaves elliptical, with 3–5 parallel veins, obtuse, coarsely serrate, chiefly towards the summit; the lower surface, particularly the veins, very hirsute; petiole short; cymes pedunculate, dense; ovary either very hairy or glabrous; fruit oval-globose (black). *Hook. fl. Bor.-Am.* 1. *p.* 280.

Shady woods of the Oregon, *Douglas*, *Nuttall!*—A low shrub. Leaves about 2 inches long, having from 3 to 5 principal nerves springing from the base. Ovary clothed with long hairs; in one specimen quite glabrous. *Hook.*

6. *V. dentatum* (Linn.): leaves roundish-ovate, often slightly cordate, coarsely and sharply toothed, acute or somewhat acuminate, appearing pli-

cate from the strong and nearly simple straight veins, glabrous and shining above, pale beneath, with tufts of villous hairs in the axils of the veins, slightly pilose-ciliate; cymes pedunculate, nearly glabrous; fruit small, globose-ovoid; the nucleus grooved or excavated on one side and obtusely ridged on the other.—*Linn.! spec.* 1. *p.* 268; *Jacq. hort. Vindob.* 1. *t.* 36; *Pursh, fl.* 1. *p.* 202; *Torr.! fl.* 1. *p.* 319; *DC.! prodr.* 4. *p.* 326; *Hook. fl. Bor.-Am.* 1. *p.* 280; *Darlingt. fl. Cest. p.* 203. V. dentatum *var.* lucidum, *Ait. Kew.* (*ed.* 1) 1. *p.* 372. V. dentatum *var.* glabellum, *Michx.* partly.

β.? *scabrellum:* young branchlets and peduncles scabrous and often hairy; leaves (often large) roundish-cordate or ovate, coarsely and rather obtusely toothed, pubescent beneath; petioles and peduncles shorter.—V. dentatum (*a.* & *β.* chiefly), *Michx.! fl.* 1. *p.* 179; *Ell. sk.* 1. *p.* 365.

Swamps and low grounds; *a.* Canada! and Northern States! to Virginia. *β.* S. Carolina and Georgia! to Florida! and Louisiana! June. *β.* March–May.—Shrub 8–15 feet high (the wood hard), with obtusely angular gray branches; the young vigorous shoots straight and slender. Fruit deep blue, or bluish-black when fully ripe, with very little pulp: nucleus with a deep longitudinal groove on one side, and the edges incurved, so that the transverse section is somewhat reniform; but sometimes there are two shallow grooves, and the edges scarcely incurved.—The northern plant is very common, and uniform in appearance: the leaves are 2–3 inches long and often of nearly the same width, with strong simply-forked veins, and quite glabrous, except the tufts in the axils of the veins, and a few scattered hairs on the young petioles and veins beneath; the peduncle is 2 or 3 inches in length; and the drupes about 3 lines long. But in Pennsylvania this same plant becomes more pubescent; a few scattered hairs often appearing on the upper surface of the leaves, while the young petioles and peduncles are clothed with separate or fasciculate hairs. A still more pubescent plant abounds in the Southern States; the leaves of which (sometimes 4 inches in breadth, but usually scarcely half that size,) are almost villous or velvety when young with somewhat fasciculate hairs, in part only deciduous: the peduncles are about an inch long, and the drupes 4 lines in length. This may very probably be a distinct species, but we are unable to distinguish it satisfactorily as such.—*Arrow-wood.*

7. *V. pubescens* (Pursh): leaves ovate or oval-oblong, acuminate, coarsely toothed, often somewhat cordate, appearing slightly plicate from the straight sparingly branched veins, somewhat hairy above; the lower surface, with the very short petioles, villous-tomentose or velvety; cyme pedunculate, nearly glabrous; fruit (small) oblong; the much compressed nucleus slightly 2-grooved on one side and obtusely ridged on the other.—*Pursh, fl.* 1. *p.* 202 (excl. the habitat. chiefly); *Torr.! fl.* 1. *p.* 320; *DC.! prodr.* 4. *p.* 326; *Hook. fl. Bor.-Am.* 1. *p.* 280. V. dentatum *var.* pubescens, *Ait. Kew.* (*ed.* 1) 1. *p.* 168. V. dentatum *var.* semitomentosum, *Michx.! l. c.* partly. V. villosum, *Raf. in med. repos.* (*hex.* 2) 5. *p.* 361 (1808), *& in Desv. jour. bot.* 1. *p.* 228; not of *Swartz.* V. tomentosum, *Raf. l. c.* (1808) *p.* 354. (without descr.) V. Rafinesquianum, *Rœm. & Schult. syst.* 6. *p.* 630.

Dry rocky banks, Canada (from Lake Winipeg) and northern part of New York! also near West Point! New Jersey, *Beck!* and the mountainous portions of North Carolina, *Schweinitz!* June.—Shrub 2–3 feet high, with straggling branches. Leaves about 2 inches long, nearly glabrous above when old. Peduncle at first shorter than the cyme, but mostly elongated in fruit. Flowers fewer and larger than in V. dentatum. Fruit 3 lines long; the nucleus nearly flat.—Perhaps the plant which Pursh, and even Aiton, had in view, may have been our V. dentatum *β.* scabrellum. The present species extends into the Southern States along the mountains; but certainly does not grow "in the lower parts of Virginia and Carolina." The plant of the *Hortus Kewensis* came from Peter Collinson's garden.

* * *Leaves lobed or incised.*

8. *V. acerifolium* (Linn.): leaves roundish or broadly ovate, mostly subcordate, 3-ribbed from the base, 3-lobed, coarsely and unequally toothed, velvety-pubescent beneath; the lobes divergent and mostly acuminate; petioles (with the young branchlets and ribs of the leaves) pubescent and somewhat hirsute, furnished near the base with two setaceous stipuliform appendages; cymes pedunculate; fruit oval, compressed; stamens much exserted.—*Linn.! spec.* 1. *p.* 268 (*pl. Gronov.!*); *Vent. hort. Cels. t.* 272; *Michx.! fl.* 1. *p.* 180; *Pursh, fl.* 1. *p.* 203; *Ell. sk.* 1. *p.* 364; *Wats. dendr. Brit.* 1. *t.* 118; *Torr.! fl.* 1. *p.* 320; *Bigel. fl. Bost. ed.* 2. *p.* 116; *DC.! prodr.* 4. *p.* 327; *Hook.! fl. Bor.-Am.* 1. *p.* 280 (partly); *Darlingt. fl. Cest. p.* 204.

Woods, particularly in rocky situations, Canada! and nearly throughout the United States! and probably in Oregon. May–June.—Shrub 3–5 feet high, with straight slender branches; the younger branchlets (like the petioles and, in a less degree, the primary veins or ribs of the leaves) usually clothed both with a very short soft pubescence, and with slender rather appressed hirsute hairs. Leaves 2–5 inches in diameter, membranaceous, glabrous or sparsely hairy above, often minutely dotted beneath; the soft close pubescence of the lower surface stellate. Peduncle about 2 inches long; the loose cyme 2–3 inches broad. Corolla often slightly tinged with rose-color. Drupe broadly oval, 3–4 lines long, nearly black when ripe: the nucleus with 2 obtuse ridges on one side, and 2 corresponding shallow grooves on the other.—*Arrow-wood.*

9. *V. pauciflorum* (Pylaie! herb.): branches and petioles glabrous or nearly so; leaves roundish, seldom subcordate, slightly 3-lobed or incised at the summit, mostly 5-nerved from the base, unequally serrate, sparsely pubescent on the veins beneath; petioles destitute of stipuliform appendages; cymes (small and simple) pedunculate, terminating the very short lateral branches; filaments much shorter than the corolla.—V. acerifolium, *Bongard! veg. Sitcha, l. c. p.* 144, partly?

Newfoundland, *Pylaie! &c.* White Mountains of New Hampshire, and on Mansfield Mountain, Vermont, *Mr. Tuckerman! & Mr. W. F. Macrae!* Probably also in Oregon and in Sitcha! June.—Shrub 2–3 feet high. Leaves 1–2 inches in diameter, nearly glabrous, or more or less pubescent on the veins of the lower surface (the hairs not stellate); the lobes often obscure. Cymes seldom an inch in diameter. Anthers on very short filaments, not exserted beyond the tube of the corolla. Fruit unknown.—For specimens of this plant, we are indebted to the promising botanists who first discovered it within the United States (Mr. Macrae of Montreal and Mr. Tuckerman of Boston), who also directed our notice to the characters which clearly distinguish them. We find from our notes upon La Pylaie's collection in Newfoundland, that he had given to the same plant the appropriate name which we have adopted. De Candolle, it will be seen, has referred Pylaie's plant to V. acerifolium. We have another Newfoundland specimen in a small collection made by a British land-surveyor, and given to us by A. B. Lambert, Esq. of London. The V. acerifolium of *Bongard, veg. Sitcha, &c.* appears to belong to, or include this species: but if we mistake not, we have a fragment of the true V. acerifolium from Oregon.—The leaves usually turn blackish in drying.

§ 2. *Cymes radiant; the marginal flowers much larger than the others, and neutral.*—OPULUS, Tourn., DC.

10. *V. Opulus* (Linn.): nearly glabrous; leaves 3-lobed; the lobes acuminate, toothed; petioles glandular; cymes pedunculate; fruit ovate-globose,

red.—*Linn. spec.* 1. *p.* 268; *Fl. Dan. t.* 661; *Engl. bot. t.* 322; *DC. prodr.* 4. *p.* 328. Opulus glandulosus, *Mœnch, meth. p.* 505.

β. *Americanum* (Ait.): leaves remotely and rather obtusely toothed.—*Ait. Kew.* (*ed.* 1) 1. *p.* 373. V. trilobum, *Marsh. arbust. p.* 162. V. Opulus β. Pimina & γ. edule, *Michx.! fl.* 1. *p.* 180. V. opuloides, *Muhl. cat. p.* 32. V. Oxycoccus & V. edule, *Pursh, fl.* 1. *p.* 203; *Torr.! fl.* 1. *p.* 320; *DC. prodr.* 4. *p.* 328; *Hook. fl. Bor.-Am.* 1. *p.* 281; *Audubon, birds of Amer. t.* 148.

γ. *subintegrifolium* (Hook.): leaves somewhat incised, very pubescent beneath. *Hook. l. c.* under V. Oxycoccus.

Swamps and along streams, from the northern part of Pennsylvania, New-York! and the New England States! to the Arctic Circle and the Rocky Mountains. β. Oregon, *Dr. Scouler*, *Douglas*. May–June.—Shrub 3–10 feet high, with glabrous gray spreading branches. Leaves 3–5 inches long, with divaricate lobes; the base either truncate or somewhat acute; the lower sprinkled with hairs: petiole often with subulate stipuliform appendages. Cyme 3–4 inches in diameter; the sterile flowers few or usually numerous, very large. Stamens exserted. Fruit nearly half an inch in length, juicy, of a pleasant acid taste when ripe, often employed as a substitute for cranberries.—We find no constant or essential characters to distinguish our plant from the V. Opulus of Europe; a garden variety of which, with the flowers all sterile, is the well-known *Snow-ball Bush*. Our plant is called *Cranberry Bush*, or *High Cranberry*.

11. *V. lantanoides* (Michx.): leaves ovate-orbicular, cordate, abruptly acuminate, finely and unequally or doubly serrate, membranaceous; the lower surface, and especially the prominent veins and the petioles, tomentose with a pulverulent partly deciduous rusty stellate pubescence; cymes sessile; the exterior flowers sterile and very large; fruit ovoid; the nucleus with a longitudinal groove on each side.—*Michx.! fl.* 1. *p.* 179; *Pursh, fl.* 1. *p.* 202; *Torr.! fl.* 1. *p.* 319; *Bigel. fl. Bost. ed.* 2. *p.* 117; *DC. prodr.* 4. *p.* 326; *Hook. fl. Bor.-Am.* 1. *p.* 280. V. Lantana β. grandifolium, *Ait. Kew. l. c.* V. Lantana β. Canadense, *Pers. syn.* 1. *p.* 327. V. grandifolium, *Smith, in Rees, cycl. no.* 14.

Deep rocky woods, Canada! the northern part of the New England States! and New York! and along the Alleghany Mountains to Virginia. May–June.—A low very straggling shrub, with the branches often procumbent. Leaves and inflorescence appearing from the same large buds, every part of the newly developed branch covered with the rusty pulverulent pubescence, which under a lens appears beautifully stellate; the leaves when old 4–6 inches long and almost the same breadth, nearly glabrous above; the numerous primary veins strongly prominent beneath, running nearly straight from the midrib to the margin, sending off a few unilateral branches; the very numerous secondary veins passing between the primary at right angles, forming beautiful transverse reticulations. Cyme large and loose, flat: the radiant sterile flowers an inch in diameter. Fruit nearly black when ripe.—*Hobble-bush.*

12. *V. molle* (Michx.): leaves somewhat orbicular-cordate, plicate-sulcate, toothed, nearly tomentose with a very soft pubescence underneath; petioles somewhat glandular; (cymes radiate ?) fruit oblong-ovate. *Michx.! fl.* 1. *p.* 180; *Pursh, fl.* 1. *p.* 203. V. alnifolium, *Marsh. arbust. p.* 162.

Kentucky, around Danville, *Michaux!* "Bark lacerate and deciduous every year." The specimen of Michaux's herbarium is in fruit only, and affords no evidence that the cymes were radiant; the leaves are crenately toothed, and somewhat resemble one form of V. dentatum β. scabrellum. Pursh, who we presume knew nothing of Michaux's plant, refers to it the V. alnifolium of Marshall, which may indeed be the same. We quote Marshall's account entire, and commend this obscure species to the botanists of Kentucky, Tennessee, &c. "This grows naturally in Carolina and other parts of America; rising with a shrubby stalk to the height of 8 or 10 feet, covered with a smooth purplish bark, and divided into several branches. The leaves are heart-shaped, oval, sharp-pointed, deeply sawed on their edges, strongly veined, and placed opposite on slender foot-stalks. The flowers are collected in large cymes or umbels at the ends of the branches; those ranged on the border are male, but the centre is filled with hermaphrodite flowers, which are succeeded by pretty large oval berries, red-colored when ripe." *Marsh. arbust. Amer. p.* 162. [illegible]

ORDER LXXIII. RUBIACEÆ. *Juss.*

Tube of the calyx adherent to the ovary, or rarely partly or almost completely free; the limb mostly 4–5-cleft or toothed, sometimes obsolete. Corolla inserted upon the summit of the calyx-tube, composed of as many united petals as there are lobes of the calyx, valvate, imbricate, or somewhat contorted in æstivation. Stamens inserted into the tube of the corolla, equal in number and alternate with its lobes (or very rarely fewer): anthers introrse. Ovary 2-(rarely 3–several-) celled, with 1–many ovules in each cell: style single or partly divided: stigmas distinct or concrete. Fruit capsular, drupaceous, baccate, or separable into indehiscent carpels. Seeds anatropous or amphitropous, solitary, few, or numerous in each cell. Embryo straight or slightly curved, in the axis or at the extremity of copious densely fleshy or horny albumen.—Trees, shrubs, or herbs, with opposite, or rarely verticillate, entire leaves. Stipules between the petioles, sometimes simulating the leaves. Flowers regular. Inflorescence various.

SUBORDER I. STELLATÆ. *R. Br.*

Leaves apparently (perhaps really?) verticillate; but the whorls generally supposed to consist of a pair of leaves and 1 to 3 leaf-shaped stipules on each side, which however are only to be distinguished from true leaves by their never bearing buds in their axils. Æstivation of the corolla valvate. Ovary entirely coherent with the tube of the calyx. Fruit consisting of 2 united indehiscent (dry or baccate) 1-seeded carpels.—Herbs, or rarely suffruticose plants, chiefly natives of temperate or cold regions.

1. GALIUM. *Linn.; Lam. ill. t.* 60; *Gærtn. fr. t.* 24; *A. Rich. Rubiac. in mem. soc. hist. nat. Par.* 5. *p.* 133; *Endl. gen. p.* 522.

Calyx-tube ovate-globose or oblong; the limb obsolete. Corolla rotate, 4-(rarely 3-) parted. Stamens as many as the lobes of the corolla, short.

Styles 2, united at the base: stigmas globose. Fruit didymous, dry or sometimes fleshy, separable when ripe into 2 indehiscent 1-seeded carpels. Albumen horny.—Herbaceous or very rarely suffrutescent plants, with tetragonal stems; the root frequently containing a red coloring matter. Flowers (rarely polygamous) small, axillary or terminal, cymulose, or rarely solitary; the cymules often paniculate.—*Cleavers. Bed-straw.*

§ 1. *Root annual.*—Aparine, *DC.*

1. *G. Aparine* (Linn.): stem weak, branching, retrorsely aculeolate-hispid, hairy about the nodes; leaves mostly 8 in a whorl, oblanceolate-linear, apiculate; the margin and keel aculeolate; peduncles elongated, axillary, 1–2-flowered; fruit large, very hispid with hooked bristles.—*Linn. spec.* 1. *p.* 108; *Engl. bot. t.* 816; *Pursh, fl.* 1. *p.* 103; *Bigel. fl. Bost. ed.* 2. *p.* 57; *Torr.! fl.* 1. *p.* 166; *DC.! prodr.* 4. *p.* 608; *Hook. fl. Bor.-Am.* 1. *p.* 290; *Darlingt.! fl. Cest. p.* 100.

Shady thickets and margin of woods, Canada and Northern States! Also in Oregon, *Douglas*, *Dr. Scouler.* May–June.—Stem 4–8 feet long. Leaves in remote whorls, 1–2 inches in length, and 2–3 lines wide, tapering to the base. Flowers white, very small. Fruit larger than in most other species of the genus.—This plant has perhaps been introduced from Europe into the United States. Hooker describes a very small variety from Oregon.

2. *G. Californicum* (Hook. & Arn.): small, very hairy throughout; stems slender, diffuse, branched from the base; leaves 4 in a whorl, ovate, acute or mucronate; peduncles nearly terminal, 1–3-flowered, much longer than the leaves; lobes of the corolla ovate, very acute; ovary glabrous.—*Hook. & Arn.! bot. Beechey, suppl. p.* 349.

β. crebrifolium (Nutt.! mss.): leaves reflexed; ovary hairy.

γ. Texanum: very hirsute throughout.

California, *Menzies, Douglas! Nuttall!* (*α.* & *β.*) *γ.* Texas, *Drummond!* —Plant about a span high. Leaves at length much shorter than the internodes, about 4 lines long, 1-nerved, appearing reticulate-veined by transmitted light. "Flowers polygamous, greenish or yellowish-green" (*Nutt.*): the corolla large for the size of the plant. Peduncles and pedicels capillary, the latter usually longer than the flowers.—The var. *β.* may be only the fertile plant: the fruit is unknown. The Californian plant is probably annual, which is certainly the case with that from Texas: our specimens of the latter are immature, not even in flower; but they doubtless belong to this species.

3. *G. virgatum* (Nutt.! mss.): stems erect, simple or branched from the base, hispid or almost glabrous; leaves 4 in a whorl, oblong-lanceolate, hispidly ciliate, rather obtuse, much shorter than the internodes; peduncles axillary, very short, bibracteolate, 1-flowered; fruit deflexed, hispid with uncinate bristles.

β. leiocarpum: fruit glabrous; stem almost glabrous.—G. nutans, *Nutt.! mss.*

Dry prairies of Arkansas, Western Louisiana, and Texas, *Nuttall! Dr. Leavenworth! Dr. Pitcher! Dr. Engelmann! Dr. Hale! Drummond!*—Stem 6–10 inches high, simple, or throwing up undivided ascending branches from near the base. Leaves about one-third of an inch long, thickish, rather obtuse; the midrib usually beset, like the margins, with scattered rigid hairs. Peduncles 1 to 2, or rarely 3 from each whorl, extremely short, furnished with 2 or rarely 3 bracteolate or involucral leaves, which become nearly as large as those of the whorl, and give the latter the appearance of being 6–8-leaved, or fasciculate. Flowers minute, white, nearly sessile within the bracts: corolla white; the lobes ovate, rather obtuse. Fruit rather large.—This plant has a different habit from any other species of the United States; but it resembles some species of the following section.

§ 2. *Root perennial: fruit fleshy or baccate: peduncles axillary, bearing usually* 4 *involucrate bracts, one-*(*rarely* 2–3-) *flowered.*—Relbuium, *Endl.* (Species of Rubia, *DC. &c.*)

4. *G. hispidulum* (Michx.): stem much branched, diffuse, minutely hairy or hispid, the angles somewhat glabrous; leaves 4 in a whorl, ovate-oblong or oval, mucronulate, minutely hispid, especially on the midrib and margins; peduncles 1–3-flowered; the pedicels (at first very short) elongated in fruit; ovary scabrous-pubescent; fruit baccate.—G. hispidulum & Rubia Brownei (excl. syn. *Browne*), *Michx.! fl.* 1. *p.* 80 & 81. G. hispidulum, *Ell. sk.* 1. *p.* 195. G. hispidum, *Pursh, fl.* 1. *p.* 104. Rubia peregrina, *Walt. Car. p.* 86. R. Walteri, *DC.! prodr.* 4. *p.* 590.

Dry sandy soil, S. Carolina! Georgia! and Florida, particularly near the ocean. May–Oct.—"Root somewhat jointed, saffron-colored." *Ell.* Stems about a foot long. Leaves 5–8 lines long, rather rigid, shining above, appearing somewhat veiny by transmitted light, both surfaces sprinkled with short rigid hairs. Peduncles axillary and terminal: pedicels longer than the fruit. Corolla (white, *Ell.*), with the lobes acuminate. Fruit large, smooth, dark-blue or purple.—The G. hispidulum of Michaux is clearly the same plant as his Rubia Brownei, described from specimens with unripe fruit. The genus Rubia will doubtless be restricted to the pentamerous species, as proposed by A. Richard.

5. *G. uniflorum* (Michx.): glabrous; stems branched at the base, assurgent, slender; leaves usually 4 in a whorl, linear, rather acute, with scabrous mostly revolute margins; peduncles, solitary or opposite, axillary, shorter than the leaves, 1–3-flowered; fruit pedicellate, nodding, glabrous, fleshy.—*Michx.! fl.* 1. *p.* 79; *Ell. sk.* 1. *p.* 95; *DC. prodr.* 4. *p.* 611; *Hook.! compan. to bot. mag.* 1. *p.* 48.

Shady rich soil, S. Carolina! to Florida! and Louisiana! April–July.—Root slender, reddish. Stems 6–12 inches long. Leaves about an inch long and a line wide, shining above, obscurely punctate, 1-nerved. Lobes of the (white) corolla acuminate. Peduncle conspicuously involucrate at the summit, usually bearing a single flower, the pedicel of which is elongated in fruit; sometimes 3-flowered, the lateral pedicels 1–2-bracteolate, rarely forked. Fruit large, fleshy, if not baccate when mature, purple?

§ 3. *Root perennial: fruit dry: peduncles* 3-*many-flowered.*—Eugalium, *DC.*

* *Flowers white or sometimes greenish: peduncles axillary or terminal, few-flowered, occasionally somewhat clustered at the extremity of the branchlets.*

† Suffrutescent: Californian.

6. *G. suffruticosum* (Nutt.! mss.): "prostrate or climbing, often suffruticose towards the base of the stem, which is acutely quadrangular and minutely aculeolate; leaves 4 in a whorl, very short, ovate-oblong, acute, scabrous on the margin; flowers (polygamous ?) pedunculate, dichotomal, and in terminal loose fascicles of few flowers; fruit glabrous.

"St. Diego, California—♃. Nearly allied to G. trichocarpum, notwithstanding the great difference in the fruit." *Nuttall.*

7. *G. trichocarpum* (DC.): much branched; stems erect, suffrutescent, glabrous, the angles obtuse; leaves 4 in a whorl, oblong-linear, 1-nerved, short, rather rigid, the margins and nerve slightly scabrous; branchlets few-flowered; fruit densely clothed with very long straight bristles.—*Nutt.! mss.; DC. prodr.* 4. *p.* 600?

β. leaves apiculate; flowers in small nearly sessile clusters terminating the branches.—G. angustifolium, *Nutt.! mss.*

St. Diego, California *Nuttall!* (*α.* & *β.*) *β.* St. Francisco? *Douglas!*—Stem stout and rigid, a foot or more high. Leaves in closely approximate whorls, about one-third of an inch long, shining, thickish. "Flowers polygamo-diœcious, greenish-white." *Nutt.* Fruit clothed with white straight bristly hairs which are longer than the immature carpels.—This plant, to one form of which Mr. Nuttall has applied the name of G. trichocarpum, is most probably either the same as De Candolle's G. trichocarpum, or his G. eriocarpum, which are both Chilian species.

† † Herbaceous.

8. *G. trifidum* (Linn.): stem flaccid, decumbent or ascending, branching; the angles retrorsely scabrous; leaves in whorls of 4–6 (the lower frequently 5 or 6, the upper 4–5), linear or oblanceolate, obtuse; the margin and midrib minutely (often retrorsely) aculeolate-scabrous; peduncles axillary and terminal, 1–3-flowered; lobes of the corolla (rather obtuse) and stamens often 3; fruit glabrous and even.—*Linn. spec.* 1. *p.* 105; *Fl. Dan. t.* 48; *Wahl. fl. Lapp. p.* 47; *Pursh, fl.* 1. *p.* 103; *Torr.! fl.* 1. *p.* 165; *Bigel. fl. Bost. ed.* 2. *p.* 56; *DC.! prodr.* 4. *p.* 597; *Cham. & Schlecht. in Linnæa,* 4. *p.* 221; *Darlingt. fl. Cest. p.* 99. G. Claytoni, *Michx.! fl.* 1. *p.* 78; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 4; *Hook.! fl. Bor.-Am.* 1. *p.* 288. Aparine floribus albis, &c. *Clayt.!* (*Gronov. fl. Virg. ed.* 2. *p.* 18.)

β. tinctorium: stem (usually stouter) scarcely or not at all scabrous; lobes of the corolla and stamens mostly 4.—G. tinctorium, *Linn. l. c.; Pursh, l. c.; Torr.! l. c.; DC.! l. c.; Darlingt. fl. Cest. p.* 100. G. trifidum, *Ell. sk.* 1. *p.* 194?

γ. latifolium (Torr.): stem diffuse, not scabrous: leaves elliptical or oblong; the margins and midrib manifestly ciliolate-scabrous.—*Torr.! fl.* 1. *p.* 165. G. obtusum, *Bigel. fl. Bost. ed.* 2. *p.* 55.

Swamps and moist low grounds, Canada! (from lat. 68°) to Virginia! S. Carolina and Western Louisiana! and from Newfoundland! to Oregon! Unalaschka, and Sitcha; also in California (*Nuttall*). June–July.—Stem 5 inches to 2 feet in length, erect when young, branched, at length diffuse or reclined. Leaves frequently only quaternate, 5–10 lines long, often less than a line wide, varying up to 3 or 4 lines wide, in var. γ. rather membranaceous, narrowed at the base. Flowers very small, white. Pedicels of the fruit slender.—A widely diffused and very variable species; the various forms of which are so blended, that we think no botanist, with a full series of specimens, will succeed in distinguishing two or more species. There is a dwarf state, growing in northern sphagnous swamps, which appears scarcely to differ from the G. palustre except in the scabrous angles of the stem: this form is also a native of the north of Europe. We have another state from Oregon (which Hooker has probably referred to G. tinctorium), which much resembles G. asprellum in its numerous flowers and very scabrous stem and margins of the leaves. The var. γ. is a more robust form, with larger fruit, and grows in drier soil: the margins of the leaves are almost ciliate, while the angles of the stem are smooth. No character can be derived from the direction of the very minute bristles which fringe the margin of the leaves: they are sometimes directed upwards on one margin and downwards on the other. The var. β. as well as γ. have usually larger fruit. The leaves are apt to turn blackish in drying.

9. *G. concinnum:* stems diffuse, decumbent, with retrorsely and minutely scabrous angles; leaves in whorls of 6 throughout, linear, mucronulate, 1-nerved, veinless, glabrous, with upwardly scabrous margins; peduncles filiform, often twice or thrice trichotomous, slightly paniculate at the extremity of the branches; pedicels short; lobes of the corolla acute or acuminate; ovary glabrous.

Dry open woods and hill-sides, Michigan, abundant near Ann Arbor! Blue Lick, Kentucky, *Dr. Short!* May–June.—Stems diffusely branched, a span to a foot high, slender, very leafy, rather rigid, as well as the smooth and shining leaves: the latter about half an inch long, or a little longer in the Kentucky plant, about a line wide. Flowers very small, but numerous, white; the peduncles and short pedicels almost capillary.—We have not seen the fruit. The leaves do not turn black in drying, and their margins and the angles of the stem are often very slightly scabrous.

10. *G. asprellum* (Michx.): stem diffuse, much branched, the angles very scabrous with minute and rigid retrorse prickles; leaves 6 (those of the branchlets often 4 or 5) in a whorl, elliptical or lanceolate, mucronate or acuminate, glabrous, except the retrorsely aculeolate-hispid margins and midrib; peduncles short, very numerous, crowded or paniculate on the flowering branchlets, di-trichotomous; pedicels filiform, divaricate; fruit glabrous or minutely hispid.—*Michx.! fl.* 1. *p.* 78; *Pursh, fl.* 1. *p.* 103; *Torr.! fl.* 1. *p.* 166; *Bigel. fl. Bost. ed.* 2. *p.* 54; *DC.! prodr.* 4. *p.* 598; *Darlingt. fl. Cest. p.* 100. G. Pennsylvanicum, *Muhl. cat. p.* 15; *Willd. mss. in Schult. mant.* 3. *p.* 183. G. micranthum, *Pursh, fl.* 1. *p.* 103? G. spinulosum, *Raf. prec. decouv.* (1814) *p.* 40?

Swampy thickets, Canada! and Northern States! common: probably also in the mountains of the Southern States. July.—Stems flaccid, usually supported on bushes, and attaining the height of 2 to 5 feet, adherent to objects which it touches by the minute sharp hooked prickles of its stem and leaves: the latter in approximate whorls, about half an inch long, tapering at the base; the lower obtuse and abruptly mucronate; the upper acuminate into a scarious subulate point. Flowers pure white, very small but extremely numerous, covering the branchlets: the peduncles and pedicels short but filiform. Lobes of the corolla acute. Fruit perhaps usually glabrous when ripe, but not unfrequently more or less hispid when young; in which state it is probably the G. micranthum of Pursh.—There is a specimen in Elliott's herbarium, mixed with his G. cuspidatum; but no locality is given. The leaves usually turn blackish in drying.

11. *G. triflorum* (Michx.): stem flaccid, reclining or procumbent, retrorsely somewhat aculeolate-scabrous or slightly hispid on the angles, shining; leaves 6 in a whorl, narrowly elliptical or elliptical-lanceolate, acuminate-cuspidate, 1-nerved, veiny, glabrous, the margins and sometimes the midrib minutely ciliolate-hispid or scabrous; peduncles axillary and terminal, mostly 3-flowered at the extremity; the flowers all pedicellate; fruit hispid with uncinate hairs.—*Michx.! fl.* 1. *p.* 80; *Willd. hort. Berol. t.* 66; *Pursh, fl.* 1. *p.* 104; *Ell. sk.* 1. *p.* 197; *Torr.! fl.* 1. *p.* 167; *Bigel. fl. Bost. ed.* 2. *p.* 56; *DC.! prodr.* 4. *p.* 601; *Hook.! fl. Bor.-Am.* 1. *p.* 290; *Darlingt.! fl. Cest. p.* 101. G. cuspidatum, *Muhl.! cat.* (*ex herb. & herb. Willd.*); *Ell.! sk.* 1. *p.* 197; *DC. l. c.* G. brachiatum, *Pursh, fl.* 1. *p.* 103. G. suaveolens, *Wahl. fl. Lapp. p.* 48. G. Pennsylvanicum, *Bart. compend. fl. Philad.* 1. *p.* 83, not of *Muhl.*

Moist woodlands, nearly throughout the United States (from Maine! to Alabama! and Louisiana!) and Canada! to Oregon! California (*Nuttall*), Unalaschka! and Sitcha. Also a native of Lapland, Sweden, and Russia as far south as Moscow! June–July.—Stem 1–4 feet long, sometimes quite smooth and glabrous even on the angles; the branches short and divergent.

Leaves membranaceous (sometimes in whorls of 5), tapering at the base, varying in size from 2 inches to three-fourths of an inch in length; those of the branches more conspicuously cuspidate. Peduncles rarely twice trichotomous. Flowers small, greenish, or greenish-white in open places: the lobes of the corolla acute or acuminate. Fruit densely hispid with white hairs.—This plant has a wide range, and (although well-marked) is subject to considerable diversities, which however we cannot distinguish as varieties. The smaller-leaved forms (G. cuspidatum, *Ell. &c.*) abound in the Southern States. It exhales a vanilla-like odor in drying.

* * *Flowers dull purple or brownish: peduncles axillary and terminal, usually 2–3 times di-trichotomous.*

12. *G. pilosum* (Ait.): stem ascending, hirsute or hairy; leaves 4 in a whorl, oval, mucronulate, indistinctly 3-nerved at the base, punctate with pellucid dots, hairy and ciliate; peduncles usually twice or thrice di-trichotomous at the extremity of the branches, the flowers all distinctly pedicelled; fruit densely hispid with uncinate bristles.—*Ait. Kew.* (*ed.* 1) 1. *p.* 145; *Pursh, fl.* 1. *p.* 104; *Ell. sk.* 1. *p.* 196; *Torr.! fl.* 1. *p.* 167; *Darlingt.! fl. Cest. p.* 101. G. puncticulosum *β.* pilosum, *DC.! prodr.* 4. *p.* 601. G. purpureum, *Walt. Car. p.* 87?

β. puncticulosum: stem and leaves, except their ciliate margins, almost glabrous.—G. puncticulosum, *Michx.! fl.* 1. *p.* 80; *DC.! l. c.* G. Bermudense, *Linn. spec.* 1. *p.* 105, as to syn. *Gronov.*, but not of *Pluk. alm. t.* 248. G. Bermudianum, *Pursh. fl.* 1. *p.* 104; *Ell. l. c?* G. punctatum, *Pers. syn.* 1. *p.* 128.

Dry woods, and in sterile shady soil, throughout the United States, from New York! to Texas! *β.* Virginia! to Louisiana! June–July.—Stems 1–2 feet high, often several from the same root, mostly simple, except the short spreading flowering branches; the pubescence variable in degree. Leaves about three-fourths of an inch long. Flowers paniculate-cymulose; the ultimate divisions of the peduncle 3-flowered. Lobes of the brownish-purple corolla acute or acuminate. Fruit very strongly hispid with white bristles.—The name of G. Bermudense should be retained for the 'Rubia tetraphylla glabra, latiore folio, Bermudensis,' etc. of Plukenet.

13. *G. circæzans* (Michx.): stem erect or ascending, nearly smooth, or sometimes hairy; leaves 4 in a whorl, oval or ovate-oblong, mostly obtuse, 3-nerved, somewhat pubescent, the margin and nerves ciliate; peduncles terminal or lateral, usually once dichotomous, divaricate in fruit, bearing several remote deflexed flowers on extremely short lateral pedicels; fruit densely hispid with uncinate bristles.—*Michx.! fl.* 1. *p.* 80; *Ell. sk.* 1. *p.* 197; *Torr.! fl.* 1. *p.* 168 (excl. syn. *Gronov.*); *Bigel.! fl. Bost. ed.* 2. *p.* 55; *DC.! prodr.* 4. *p.* 601; *Darlingt. fl. Cest. p.* 102. G. brachiatum, *Muhl. cat. p.* 16, not of *Pursh.* G. boreale, *Walt. Car. p.* 257. G. circæoides, *Ræm. & Schult. syst.* 3. *p.* 256.

β. lanceolatum (Torr.): leaves lanceolate, or often ovate-lanceolate, rather acute.—*Torr.! cat. pl. New York, p.* 23; *DC.! l. c.* G. lanceolatum, *Torr.! fl.* 1. *p.* 168; *Hook. fl. Bor.-Am.* 1. *p.* 280; *Darlingt. fl. Cest. p.* 102. G. Torreyi, *Bigel.! fl. Bost. ed.* 2. *p.* 56.

γ. montanum: dwarf; leaves obovate, nearly glabrous.—G. Littellii, *Oakes! mss.*

Rich woodlands, Canada! to Florida, Louisiana! Arkansas! and Missouri! *γ.* Mountains of New Hampshire, Vermont, and New York, *Mr. Oakes! Mr. W. F. Macrae! Mr. Tuckerman.*—Stems 10–18 inches high, often many from the same root, or branched from the base. Leaves 1–1½, or in *β.* sometimes more than 2 inches long, variable as to pubescence; the lower surface marked with scattered indistinct vesicular dots. The inflorescence assumes a scorpioid form: the peduncles usually fork at the base of the pedicel of the earliest flower, but seldom if ever afterwards: beyond this the divisions of the peduncle are prolonged indefinitely, bearing a solitary almost or quite sessile (central or alar) flower at each node. Corolla brownish-purple (rarely cream-colored!); the lobes acuminate-cuspidate. Fruit clothed with dense white bristles.—The leaves of our var. β. are said by Dr. Darlington, not to have the sweet taste which characterizes G. circæzans: that plant is usually perhaps sufficiently distinct in appearance, but the frequent intermediate states seem to forbid their separation. We suppose our var. γ. to be a state of this species growing upon high mountains; but our specimens are insufficient. The stems are 4–6 inches long, and the leaves large in proportion.—*Wild Liquorice.*

14. *G. latifolium* (Michx.): stem erect, smooth; leaves 4 in a whorl, lanceolate, acute, 3-nerved, punctate with oblong pellucid dots, glabrous; the margins and midrib minutely hispid-ciliolate; peduncles axillary and terminating the short branches, twice or thrice dichotomous, and with the filiform pedicels divaricate or spreading; fruit (pretty large) glabrous.—*Michx.! fl.* 1. *p.* 79; *DC.! prodr.* 4. *p.* 599.

β. leaves rather rigid, less acute; pedicels and ovaries sparsely and minutely scabrous.—G. latifolium, *Hook. compan. to bot. mag.* 1. *p.* 48.

On the Alleghany Mountains of North and South Carolina, *Michaux! Fraser* (in *herb. DC.*) and of Georgia, *Mr. Buckley!* β. Missouri (or Arkansas?) *Dr. Engelmann!* June–July.—Stem a foot or more high. Leaves 1–2 inches long, tapering from near the base to the apex, rather acute at each end; the whorls somewhat distant. "Flowers violet-purple." *Michx.*—We have seen the specimens in the herbaria of Michaux and De Candolle, but have only recently received the plant from Mr. Buckley, who states that it is very common on the Alleghany Mountains: our specimen is in fruit. The variety from Dr. Engelmann is in the same state, and only differs (besides the slight characters indicated above), in having the whorls more approximated. It is a well-marked species.

* * * *Flowers white; the peduncles disposed in a terminal panicle.*

15. *G. boreale* (Linn.): stem erect, straight, smoothish; leaves 4 in a whorl, linear-lanceolate, strongly 3-nerved, rather obtuse; panicle elongated, somewhat pyramidal; fruit hispid with short scarcely uncinate hairs, or sometimes glabrous.—*Linn. spec.* 1. *p.* 108; *Pursh, fl.* 1. *p.* 104; *Torr.! fl.* 1. *p.* 169; *Hook.! fl. Bor.-Am.* 1. *p.* 289; *Darlingt. fl. Cest. p.* 103. G. Bermudianum, *Muhl. cat. p.* 16. (ex herb., fide *Darlingt.*) G. strictum, *Torr.! cat. pl. New York. p.* 23. G. septentrionale, *Ræm. & Schult. syst.* 3. *p.* 253; *Bigel.! fl. Bost. ed.* 2. *p.* 54; *DC.! prodr.* 4. *p.* 601.

Woods and rocky banks of streams, Northern States! and Canada! to Arctic America and Oregon! July.—Stem 1–2 feet high, somewhat branching, often pubescent at the nodes. Leaves 10–18 lines long, often rather broadly lanceolate, and slightly ciliate when young in the American plant. Lobes of the corolla acute.—There is an European variety with glabrous fruit, and another with the ovary very slightly and sparsely hispid: both these states occur not unfrequently in this country.

16. *G. rubioides* (Linn.): stem erect, straight, smoothish; leaves 4 in a whorl, elliptical-lanceolate, strongly 3-nerved, scabrous on the margin; peduncles numerous, trichotomous, disposed in a large terminal panicle; fruit glabrous.—*Linn. spec.* 1. *p.* 105; *Cham. & Schlecht. in Linnæa,* 3. *p.* 220; *DC. prodr.* 4. *p.* 599; *Hook. & Arn. bot. Beechey, p.* 115; *Hook. fl. Bor.-Am.* 1. *p.* 289.

Dry elevated soils, under pine trees, in the valley of the Oregon, *Douglas.*

Kotzebue's Sound, *Capt. Beechey.*—This is a robust plant, with the habit of G. boreale, but with larger and broader leaves. Hooker states that he has received specimens of it from the United States, under the name of G. Bermudianum; but his plant is perhaps G. latifolium. On the authority of Steven, De Candolle mentions a variety with hispid fruit.

* * * * *Flowers yellow, in dense panicles terminating the branches: fruit smooth.*

17. *G. verum* (Linn.): stem erect, slender; leaves 8 in a whorl, narrowly linear, sulcate, scabrous, with somewhat revolute margins; flowers crowded.—*Linn. spec.* 1. *p.* 107; *Engl. bot. t.* 660; *Fl. Dan. t.* 1146; *Bigel.! fl. Bost. ed.* 2. *p.* 55; *DC. prodr.* 4. *p.* 603.
Dry pastures, Roxbury, Massachusetts, *Bigelow!* North Bridgewater, Massachusetts, *Mr. Tuckerman!* Doubtless introduced from Europe. June–July.

‡ *Doubtful Species.*

18. *G. parviflorum* (Raf.): stems diffuse, angled, glabrous; leaves in whorls of 5 or 6, linear-lanceolate, very acute, glabrous; flowers paniculate (white, minute), very numerous.—*Raf. in med. repos.* (*hex.* 2) 5. *p.* 360, & *in Desv. jour. bot.* 1. *p.* 227.
Near Newcastle, Delaware, *Rafinesque.*

SUBORDER II. CINCHONEÆ. (Order Cinchonaceæ, *Lindl.*)

Leaves opposite, or very rarely verticillate. Stipules one (2 united) or two on each side between the petioles (interpetiolar), often united with each other or with the petioles, or with both, so as to form a sheath. Æstivation of the corolla valvate, imbricated, or contorted. Ovary coherent with the tube of the calyx, or very rarely with the upper portion free.—Chiefly tropical or subtropical trees or shrubs, rarely herbs.

TRIBE I. SPERMACOCEÆ. *Cham. & Schlecht.*

Fruit dry, or scarcely fleshy, composed of 2 (rarely 3 or 4) 1-seeded carpels; which are sometimes concrete, sometimes separating and indehiscent, or variously dehiscent, but never loculicidal. Albumen fleshy or somewhat horny. Æstivation of the corolla valvate.—Herbs or shrubs. Stipules membranaceous at the base, usually with several bristles at the apex.

Subtribe 1. EUSPERMACOCEÆ, *DC.*—Flowers distinct. Fruit dry, separating when mature into 2 (rarely 3 or 4) carpels, or sometimes inseparable.

2. SPERMACOCE. *Linn.* (partly); *Gærtn. fr. t.* 25; *Cham. & Schlecht. in Linnæa,* 3. *p.* 355; *DC. prodr.* 4. *p.* 552.

Calyx-tube ovate or turbinate; the limb 2–4-parted, sometimes with accessory teeth. Corolla hypocrateriform or infundibuliform, 4-lobed. Stamens 4. Stigma 2-cleft or undivided. Fruit dry, crowned with the (sometimes obliterated) teeth of the calyx, 2-celled; the 2 one-seeded carpels separating from the apex downwards; the one closed by the dissepiment, the other open. Seeds oval-oblong, peltate, marked with a shallow furrow on the face.—Herbaceous or rarely suffrutescent plants (chiefly tropical), with linear, oblong, or roundish leaves. Stipules cohering with both petioles, sheathing, fringed with several bristles. Flowers small, axillary, sessile, crowded or in whorls, usually pale blue or white.

Spermacoce, Borreria, and Diodia, differ only in the dehiscence of the fruit: in the first, one carpel opens while the other remains closed; in the second, both are dehiscent; in the third, both are indehiscent.

1. *S. glabra* (Michx.): herbaceous, perennial, procumbent, glabrous; leaves lanceolate; whorls many-flowered; calyx 4-toothed; corolla campanulate-funnel-form, a little longer than the calyx, very woolly in the throat; anthers included, nearly sessile at the base of the tube; style very short; stigma 2-lobed; fruit turbinate.—*Michx.! fl.* 1. *p.* 82; *Pursh, fl.* 1. *p.* 105.
Banks of rivers, Western and South Western States! Middle Florida, *Dr. Chapman!* Texas, *Drummond!* July–Aug.—Stem branching, 1–2 feet long; the branches somewhat quadrangular. Leaves 1–3 inches long, acute, attenuate at the base. Stipules with 5–6 subulate bristles, which are several times longer than the sheath. Whorls 10–20-flowered. Flowers scarcely more than 1½ line long. Teeth of the calyx lanceolate. Corolla white; the lobes semi-oblong. Style almost wanting: stigma with 2 diverging lobes. Capsule chartaceous; the cells tardily separating. Seeds attached by the middle of the face to the placenta. Embryo in the axis of cartilaginous albumen: cotyledons oblong: radicle pointing downwards.—The plant becomes blackish in drying.

2. *S. Chapmanii:* perennial? stem herbaceous, sparingly branched, slightly angled with 4 elevated lines, glabrous; leaves oblong-lanceolate, acute, attenuated at the base into a petiole, somewhat scabrous above; stipules with 5–6 bristles, which are rather longer than the sheath; flowers in dense axillary clusters; corolla funnel-form, 3 times as long as the calyx; stamens exserted; style long and slender; stigma indistinctly 2-lobed; capsule oblong-pyriform, crowned with 4 calyx-teeth.
Middle Florida, on the banks of the Aspalaga River, *Dr. Chapman!* and in Louisiana!—Stem about 2 feet high. Leaves an inch and a half long, rather strongly marked beneath with the simple oblique veins. Clusters of flowers dense, often half an inch in diameter. Calyx slightly hairy; the teeth lanceolate. Corolla 3 lines long, white? Filaments slender, inserted in the throat of the corolla: anthers oblong. Style glabrous, scarcely exserted. Capsule coriaceo-crustaceous, dehiscent when mature, and leaving the thin dissepiment adhering to one of the cells.—Nearly allied to S. tenuior; but that species has a short obovate fruit, and very short included stamens and style. We have specimens from Louisiana (in flower, without fruit), but have no memorandum of the source from which they were derived; in these the lobes of the corolla are sprinkled, both internally and externally, with short, flattish, apparently deciduous hairs.

3. *S. tenuior* (Linn.): stem annual, branching; the branches obtusely angled, glabrous or somewhat scabrous; leaves lanceolate, with short petioles, scabrous on the margin and upper surface; stipules with 5–6 bristles, which are rather longer than the sheath; whorls few, many-flowered; corolla somewhat campanulate, the tube scarcely twice the length of the calyx; stamens much shorter than the corolla; style the length of the stamens; stigma 2-lobed; capsule obovate, crowned with 4 calyx-teeth.—*Linn. spec.* 1. *p.* 102; *Lam. ill. t.* 62, *f.* 1; *A. Rich. mem. Rub. l. c. t.* 4, *no.* 2; *DC. prodr.* 4. *p.* 552. S. verticillis tenuioribus, *Dill. Elth. t.* 277, *f.* 359.
Key West, Florida, *Mr. Blodgett!*—Stem 8–12 inches long, in our speci-

mens glabrous. Leaves about an inch long. Whorls few-(6–10-) flowered. Flowers smaller than in the preceding species. Anthers roundish-oblong.—This is chiefly a West Indian species, and we doubt whether it has been found hitherto within the limits of our Flora.

‡ *Doubtful Species.*

[illegible]

4. *S. involucrata* (Pursh): stem alternately branched, very hispid; leaves ovate-lanceolate, acuminate, hirsute on both surfaces; stipules with many bristles; heads terminal, involucrate: stamens exserted. *Pursh, fl.* 1. *p.* 105.

Carolina, *Fraser.*—About a foot high. Leaves broad and somewhat oblique. Flowers white, with a very long tube. *Pursh.*—The specimen in Mr. Lambert's herbarium, which is said to have been collected by Fraser (but we suspect there is some mistake as to the locality), is marked, perhaps by Mr. Don, "S. strigosa, *Bot. mag.*"; a species which has been referred to the genus Crusea.

3. BORRERIA. *Meyer, fl. Essequeb. p.* 79; *DC. prodr.* 4. *p.* 540.

Bigelovia, *Spreng. syst.*; not *Spreng. entd.*, nor of *Smith*, nor of *Raf.* nor of *DC.*

Calyx-tube ovate; the limb persistent, 2–4-toothed. Corolla infundibuliform or hypocrateriform, 4-lobed. Stamens 4. Stigma 2-cleft or undivided. Fruit dry, crowned with the teeth of the calyx, 2-celled; the 2 one-seeded carpels separating from the apex downwards, and each dehiscing equally by a longitudinal chink along the inner surface. Seeds obovate-oblong, marked on the face with a longitudinal furrow.—Herbaceous or suffrutescent (tropical) plants. Leaves sometimes apparently verticillate from the fascicles in the axils. Stipules cohering with both petioles, fringed with several bristles. Flowers small, in axillary or terminal usually capitate whorls, blue or white.

1. *B. micrantha:* annual; stem prominently 4-angled, glabrous; the nodes distant; leaves linear-lanceolate, acute at each end, scabrous above, nearly glabrous underneath; bristles of the stipules 8–10, much longer than the scabrous sheaths; whorls many-flowered, all of them axillary; calyx-tube hispid; corolla hypocrateriform, shorter than the calyx-teeth; capsule ovate, membranaceous, crowned with the 4 spreading lanceolate-subulate calyx-teeth.

Tampa Bay, Florida, *Dr. Leavenworth!*—Stem 2 feet or more in length (erect?); the internodes about 2 inches long. Leaves 1–2 inches in length, and 2–3 lines wide, almost hispidly scabrous above. Whorls 40–50-flowered. Corolla white, scarcely a line long. Stamens very short. Style included, notched at the apex. Capsule at first splitting within the calyx-teeth contrary to the dissepiment, and afterwards septicidally nearly to the base. Seed oblong, nearly terete, black, strongly pitted, with a narrow groove on the face.—In the mode of dehiscence, this plant resembles Hedyotis, one species of which (H. monosperma, *Wight & Arn.*) has but a single seed in each cell.

4. DIODIA. *Linn.*; *Gærtn. fr. t.* 25; *DC. prodr.* 4. *p.* 561.

Calyx-tube ovate or obovate, often 8-nerved; the limb 2–4-parted. Corolla infundibuliform or tubular, 4-lobed. Stamens 4, inserted into the throat of the corolla. Stigma or style 2-cleft or undivided. Fruit dry or slightly fleshy, crowned with the teeth of the calyx, 2- (rarely 3-) celled; the 2 (or 3) one-seeded carpels separating from the apex downwards, both indehiscent. Seeds oval, peltate, flattish, marked with a shallow furrow on the face.—Herbaceous or rarely suffrutescent plants (American, but chiefly tropical), with the habit of Spermacoce. Leaves often fascicled in the axils, so as to appear verticillate. Stipules usually fringed with bristles. Flowers small, white, axillary, solitary or several together.

* *Corolla somewhat hypocrateriform, with a long and very slender tube: style deeply 2-cleft; fruit crowned with* 2 (*or* 4 *alternately smaller*) *calyx-teeth.*

1. *D. Virginiana* (Linn.): perennial, herbaceous; stem procumbent; leaves varying from lanceolate-linear to oblong-lanceolate, sessile; bristles of the stipules longer than the sheaths; flowers solitary, opposite; tube of the corolla 3 or 4 times the length of the calyx-teeth, tubular, the limb abruptly expanded; stamens exserted; lobes of the deeply 2-cleft style filiform; fruit ovoid or oblong, coriaceous, crowned with 2 (rarely 4 alternately smaller) lanceolate calyx-teeth.

α. Linnæi: nearly glabrous; leaves lanceolate; fruit oblong, somewhat glabrous.—D. Virginiana, *Linn. spec.* 1. *p.* 104; *Lam. ill. t.* 63. D. Virginica, *Willd. spec.* 1. *p.* 58 (excl. syn. *Walt.*); *Pursh, fl.* 1. *p.* 105; *Ell. sk.* 1. *p.* 190; *DC. prodr.* 4. *p.* 562. Spermacoce Virginiana, *A. Rich. mem. l. c. t.* 4. *f.* 3.

β. latifolia: somewhat pubescent; leaves ovate-lanceolate; fruit ovate, hairy.—D. Virginica, *Michx.! fl.* 1. *p.* 81. D. tetragona, *Walt. Car. p.* 87; *Ell. sk.* 1. *p.* 190; *DC. l. c.*

γ. hirsuta: whole plant very hairy; leaves linear-lanceolate, very acute; fruit oblong.—D. hirsuta, *Pursh, fl.* 1. *p.* 106; *Ell. sk.* 1. *p.* 191; *DC. l. c.*

Damp soil, particularly along rivers. *α.* & *β.* Virginia! to East Florida! Alabama and Louisiana! *γ.* South Carolina, *Elliott.* Georgia, *Pursh*, Middle Florida, *Dr. Chapman!* May–Oct.—Stem 1–2 feet long, somewhat quadrangular. Leaves 1–2 inches long; in *β.* those of the branches much shorter and broader in proportion than the lower cauline ones; in *γ.* nearly all of equal length. Flowers nearly half an inch long. Corolla white; the segments lanceolate-oblong, more or less hairy inside. Anthers linear. Capsule 2–3 lines long in *α.* and *β.*, 4–5 lines in *γ.*, marked with several strong longitudinal ridges. Seed oblong, plano-convex. Embryo nearly as long as the albumen: cotyledons oblong: radicle inferior, slender.—We find so many intermediate forms between D. Virginica, tetragona, and hirsuta of authors, that we can scarcely distinguish them even as varieties.

* * *Corolla infundibuliform, with a wide tube: style undivided: stigma capitate or 2-lobed: fruit crowned with* 4 (*rarely* 5) *calyx-teeth.*

2. *D. teres* (Walt.): annual, ascending or procumbent; stems pubescent or hairy; leaves linear or linear-lanceolate; bristles of the stipules much longer than the fruit; flowers solitary or 2–3 in each axil; corolla much longer than the minutely serrulate-ciliate calyx-teeth; the stamens shorter than its lobes; stigma large, 2-lobed; fruit somewhat hairy, ovoid-turbinate and somewhat quadrangular, separating into 2 crustaceous carpels.—*Walt. Car. p.* 87; *DC.! prodr.* 4. *p.* 562; *Darlingt. fl. Cest. p.* 104. Spermacoce diodina, *Michx.! fl.* 1. *p.* 82; *Pursh, fl.* 1. *p.* 85; *Ell. sk.* 1. *p.* 189; *Torr.! fl.* 1. *p.* 170.

Sandy fields, New Jersey! to Florida! and Louisiana! and west to Illinois! and the sources of the Canadian River, *Dr. James!* Aug.–Sept.—Stem nearly terete, 4–16 inches high, much branched, clothed with a short pubescence, and sprinkled with spreading hirsute hairs. Leaves about an inch long, pale, the margins and midrib ciliolate-scabrous. Corolla 3–4 lines long, white or pale red, sprinkled with minute hairs under a lens. Anthers linear-oblong. Capsule (usually but one in each axil) about 2 lines long, much longer than the calyx-teeth.

3. *D. tricocca:* perennial, much branched, depressed; stems somewhat hairy: leaves linear, with revolute margins; bristles of the stipules scarcely as long as the fruit; flowers glomerate in the upper axils; corolla scarcely exceeding the strongly hispid teeth of the calyx (often 3-lobed); the stamens about the length of the lobes; stigma small, capitate; fruit obovate-globose, at first hispid, scarcely longer than the (4, rarely 5!) conspicuous calyx-teeth, separating into 3 chartaceous carpels.

Texas, *Drummond!*—Plant resembling a small state of D. teres, 3–4 inches high, apparently perennial. Leaves smooth above; the margins and midrib beneath somewhat hairy or hispid, at least when young. Flowers and fruit much smaller than in the preceding; the latter scarcely half the size, and apparently always tricoccous, very hispid when young, as well as the lanceolate teeth of the calyx. with stout bristles; but the mature fruit is often nearly or quite glabrous; the carpels roundish-obovate, flattened.—Our specimens do not exhibit the corolla in good condition: but all the flowers which we have examined present a 3-lobed corolla, 3 stamens, and a tricarpellary ovary, while the teeth of the calyx are 4, or very rarely 5, in number. Probably these characters are not constant, but the species is very different from any with which we are acquainted.

Subtribe 2. PUTORIEÆ, *DC.*—Flowers distinct. Fruit somewhat fleshy or drupaceous, seldom bipartible.

5. ERNODEA. *Swartz, prodr. p.* 29, *& fl. Ind. Occ. p.* 223, *t.* 4; *Gærtn. fr. t.* 196, *f.* 6; *A. Rich. mem. l. c. t.* 15, *f.* 2; *DC. prodr.* 4. *p.* 576.

Calyx-tube ovate; the lobes of the 4–6 parted limb oblong-linear, acute, pubescent. Corolla hypocrateriform, with a somewhat quadrangular tube; the lobes 4–6, lanceolate, revolute, valvate in æstivation. Filaments inserted into the upper part of the tube: anthers linear, exserted. Style filiform, longer than the stamens: stigma emarginate. Fruit drupaceous, obovate or roundish, 2-celled, crowned with the long erect segments of the calyx, bipartible when mature; the nuclei 1-seeded, cartilaginous, indehiscent. Seeds peltate, flat and furrowed on the face. Embryo straight: cotyledons oval.—A suffrutescent and decumbent glabrous (West Indian) plant; with sessile somewhat rigid lanceolate leaves. Stipules sheathing, many-parted. Flowers axillary, solitary, sessile, yellowish. Fruit yellow.

E. littoralis (Swartz, l. c.)—Knoxia, *P. Browne, Jam. p.* 140. *no.* 1. Thymelea, *Sloane, hist. Jam. t.* 169.

Key West, *Mr. Blodgett!* Southern Florida, *Dr. Hassler!*—Stem 6–10 inches long, branching from the base, stout and rigid; the branches quadrangular. Leaves mostly crowded towards the extremity of short branches, about an inch long, somewhat coriaceous or fleshy, very acute and mucronate, 3-nerved. Flowers small. Fruit with a thin and rather dry pulp, separable when ripe into 2 plano-convex portions, crowned with the long lanceolate foliaceous calyx-teeth.

Subtribe 3. CEPHALANTHEÆ, *DC.*—Flowers and fruit sessile and densely aggregated on a globose receptacle. Fruit dry, 2–4-partible.

6. CEPHALANTHUS. *Linn.; Lam. ill. t.* 59; *Gærtn. fr. t.* 86.

Calyx-tube obpyramidal; the limb 4-toothed. Corolla tubular, slender; the lobes of the 4-cleft limb erect, imbricate in æstivation. Stamens 4, scarcely exserted. Style filiform, much exserted: stigma capitate. Fruit inversely pyramidal, coriaceous, 2–4-celled, separating from the base to the summit into 2–4 closed one-seeded portions. Seeds pendulous, conformed to the cell, crowned with a kind of corky arillus. Embryo straight, in the axis of somewhat cartilaginous albumen: cotyledons oblong, foliaceous: radicle slender.—Shrubs (American); with oval or lanceolate (opposite or ternate) leaves. Stipules short, distinct or somewhat united. Flowers densely aggregated in a globose head (the receptacle hairy): the peduncles terminal and from the upper axils. Corolla white.—*Button-Bush. Pond-Dogwood.*

1. *C. occidentalis* (Linn.): mostly glabrous; leaves opposite and ternate, ovate or oblong-oval, acuminate, distinctly petioled, usually glabrous; peduncles longer than the heads, usually ternate at the extremity of the branches.—*Michx.! fl.* 1. *p.* 87; "*Duham. arb. t.* 54, *Schkuhr. handb. t.* 21, *& t.* 5. *&* 6. *fr.*"; *Pursh. fl.* 1. *p.* 114; *Ell. sk.* 1. *p.* 186; *Torr.! fl.* 1. *p.* 164; *Bart. fl. Amer. Sept.* 3. *t.* 91; *Darlingt. fl. Cest. p.* 98; *DC. prodr.* 4. *p.* 538.

β. younger branches and lower surface of the leaves pubescent.

Margin of swamps and wet thickets, Canada! and Northern States! to Georgia! Arkansas! and Texas! (the northern plant usually glabrous; the southern more or less pubescent.) July–Aug.—Shrub 3–10 feet high, branched, with light spongy wood, and smooth bark. Leaves 3–5 inches long, more frequently opposite than ternate, feather-veined. Heads an inch in diameter, on peduncles about 2 inches long. Calyx-tube produced above the ovary; the teeth obtuse, persistent. Corolla nearly half an inch long; the limb somewhat funnel-form; the lobes obtuse.

TRIBE II. COFFEEÆ. *DC.*

Fruit drupaceous, containing 2 one-seeded bony or crustaceous nucules; which are flattish or grooved on the inner side, and often marked with a furrow on the outer. Albumen horny or somewhat cartilaginous. Æstivation of the corolla usually valvate.—Trees or shrubs. Stipules 2 between the petioles on each side, either distinct or combined. Flowers distinct, or in capitate involucrate fascicles.

7. CHIOCOCCA. *P. Browne, Jam. p.* 174; *Linn.; Lam. ill. t.* 480; *Gærtn. fr. t.* 26; *A. Rich, mem. l. c. p.* 106; *DC. prodr.* 4. *p.* 482.

Calyx-tube ovate; the limb acutely 5-toothed. Corolla campanulate-infundibuliform, 5-lobed; the lobes spreading. Stamens 5: filaments inserted into the base of the corolla, and scarcely cohering with it, somewhat monadelphous, pubescent: anthers linear, included. Style filiform, somewhat clavate at the summit: stigma entire, or of 2 agglutinated lobes. Fruit fleshy, globose-compressed and somewhat didymous, crowned with the calyx-teeth, including 2 oblong coriaceous nucules. Seeds suspended. Embryo straight, in the axis of somewhat cartilaginous albumen: radicle long and slender: cotyledons small.—Shrubs (tropical American), often with sarmentose branches. Leaves petioled, glabrous. Stipules connate. Flowers white or often turning yellowish, in axillary opposite racemes. (Root emetic, &c.)

1. *C. racemosa* (Jacq.): leaves oval, acute at each end; corolla many times longer than the teeth of the calyx; filaments puberulent.—*Jacq. stirp. Amer. p.* 68; *Michx.! fl.* 1. *p.* 103; *Andr. bot. rep. t.* 284; *Hook.! exot. fl. t.* 93; *DC. prodr.* 4. *p.* 482. (*ε. Floridana.*) Jasminum flore myrtino, &c., *Sloane, Jam. t.* 188. *f.* 3. Periclymenum racemosum, &c., *Dill. Elth. t.* 228, *f.* 295. Lonicera alba, *Linn. spec.* 1. *p.* 175.

Sea coast of Florida, *Michaux!* Key West, *Mr. Blodgett!* (Also West Indian & Mexican.)—Leaves 2–3 inches long, and an inch or more broad, abruptly tapering at the base into a narrow petiole, somewhat shining above. Racemes in the axils of the uppermost leaves, and exceeding them in length, usually simple; the flowers somewhat secund, "at first white and inodorous, but at length yellowish and odorous". Fruit about the size of a pea, white. The branches are sometimes sarmentose; the leaves somewhat variable in form, and often acuminate; and the racemes either simple or paniculate.—*Snowberry.*

8. PSYCHOTRIA. *Linn.; Gærtn. fr. t.* 25; *DC. prodr.* 4. *p.* 504; *W. & Arn. prodr. Ind. Or.* 1. *p.* 432.

Calyx-tube ovate; the limb short, 5-lobed, 5-toothed, or somewhat entire. Corolla infundibuliform, usually short, 5- (or rarely 4-) cleft, regular, with the throat glabrous or bearded; the limb spreading or recurved; the segments incurved at the point: æstivation valvular. Stamens 5, or rarely 4: anthers exserted or included within the throat of the corolla. Stigma 2-cleft. Fruit drupaceous, containing 2 nucules, crowned with the limb of the calyx, usually marked with 10 ribs by drying; sometimes 4-angled and with four furrows, sometimes even; nucules chartaceously coriaceous, ribbed, angled, or even, 1-seeded. Seed erect, with a cartilaginous solid (not ruminated) albumen.—Trees or shrubs, rarely herbaceous plants. Leaves opposite, petioled. Peduncles usually terminal. Flowers panicled or corymbose. *Arn.*

1. *P. lanceolata* (Nutt.): leaves lanceolate, acuminate at each end; the lower surface as well as the branchlets ferruginous-pubescent; stipules amplexicaul, roundish, deciduous, sphacelate; corymb terminal, trichotomous at the base. *DC.*—*Nutt. in Sill. jour.* 5. *p.* 290 (1822); *DC. prodr.* 4. *p.* 513.

East Florida, *Mr. Ware.*—"Leaves 2–3 inches long. Berries ovate, red."—This is unknown to us. De Candolle remarks that he has seen a specimen collected by Michaux. We have insufficient specimens, apparently belonging to another species of Psychotria, collected in Florida by Dr. Leavenworth.

TRIBE III. GUETTARDEÆ. *Kunth.*

Fruit drupaceous, 2–8-celled, or containing 2–8 one-seeded nucules. Seeds somewhat terete, elongated, usually erect. Albumen mostly fleshy. Æstivation of the corolla usually contorted or valvate.—Small trees, shrubs, or very rarely herbs. Stipules between the petioles.

Subtribe 1. MORINDEÆ, *DC.*—Flowers and fruit aggregated in a dense head and more or less coherent with each other. Æstivation of the corolla valvate.—Tropical shrubs or small trees.

9. MORINDA. *Vaill.; Linn.; Lam. ill. t.* 153; *Gærtn. fr. t.* 29.

Calyx-tube obovate, cohering with the adjoining flowers; the limb short, scarcely toothed. Corolla infundibuliform; the tube somewhat terete; the limb spreading, 5- (rarely 4-) lobed. Stamens 5 (rarely 4): filaments short: anthers usually included. Style filiform: stigma 2-cleft; the lobes filiform. Fruit baccate, containing 2–4 nucules, all usually concreted into a compound subglobose fruit, which is areolate with the traces of the calyx. Embryo terete, in a fleshy albumen.—Shrubs or trees. Leaves opposite, rarely 3 or 4 in a whorl. Stipules within the petioles, usually obtuse. Peduncles solitary or several together, axillary, opposite the leaves (from the suppression of a leaf), or terminal. Flowers sessile upon a globose receptacle. (Bark of the root styptic and used for dyeing.)

1. *M. Roioc* (Linn.): glabrous, procumbent at the base; leaves broadly oblanceolate, acute, gradually narrowed at the base into a short petiole; stipules broad and very short, bimucronate; peduncles short, axillary or opposite a leaf; stamens somewhat exserted.—*Linn. spec.* 1. *p.* 176; *Jacq. hort. Vindob. t.* 16; *DC. prodr.* 4. *p.* 448. Royoc humifusum, *Plumier, gen. p.* 11, *t.* 26. Periclymenum Americanum, &c., *Pluk. alm. t.* 212, *f.* 4.

Key West, *Mr. Blodgett!* Common in the West Indies, &c.—Leaves 2–3 inches long, glabrous on both surfaces, except a pubescence in the axils of the larger veins underneath. Peduncles 4–6 lines long, usually opposite a leaf. Heads about half an inch in diameter. Flowers crimson.

Subtribe 2. MITCHELLEÆ.—Flowers solitary, or geminate with their ovaries united. Æstivation of the corolla valvate. Albumen somewhat cartilaginous or corneous.—Creeping evergreen herbs, natives of the northern and southern extratropical regions, and on mountains within the tropics.

10. MITCHELLA. *Linn.; Lam. ill. t.* 63; *Gærtn. fr. t.* 192.

Chamædaphne, *Mitch.*; not of *Buxb.*

Flowers in pairs, with their ovaries united. Limb of the calyx conspicuous, 4-toothed. Corolla infundibuliform, with a slender tube, 4-lobed; the lobes spreading, densely hirsute or bearded within (as well as the throat) with white hairs. Stamens 4, somewhat included: filaments inserted into the throat of the corolla: anthers oblong. Style filiform: stigmas 4, linear, somewhat exserted. Fruit baccate, oblate-globose, usually composed of the united ovaries of both flowers (one of them sometimes abortive, or wanting?); each of which contains 4 small corneous 1-seeded nucules. Embryo minute, at the extremity of somewhat cartilaginous albumen: cotyledons short; the radicle thick. Glabrous creeping evergreen herbs (indigenous to North America, and perhaps to the mountains of Peru?) with opposite ovate or roundish petioled leaves. Stipules triangular-subulate, minute. Flowers terminal, white or pale rose-color, odorous. Fruit bright red, edible, persistent.

We have drawn the character exclusively from M. repens; since it is doubtful whether M. ovata, *DC.* (which we have not seen,) belongs to this genus, rather than to Nertera. Does not the Nertera depressa, *Banks* (or rather *Solander*), as left by De Candolle, include two or more species?

1. *M. repens* (Linn.): leaves roundish-ovate, often slightly cordate; peduncle 2-flowered.—*Linn.! spec.* 1. *p.* 111; *Michx.! fl.* 1. *p.* 86; *Pursh, fl.* 1. *p.* 101; *Ell. sk.* 1. *p.* 198; *Torr.! fl.* 1. *p.* 174; *Bigel. fl. Bost. ed.* 2. *p.* 52; *Bart. fl. Amer. Sept. t.* 95, *f.* 1; *DC.! prodr.* 4. *p.* 452; *Hook.! fl. Bor.-Am.* 1. *p.* 287; *Darlingt. fl. Cest. p.* 105. Syringa baccifera, &c., *Pluk. amalth. t.* 444, *f.* 2; *Catesb. Car.* 1. *t.* 20. Lonicera foliis subovatis &c. *Gronov.! fl. Virg. ed.* 1. *p.* 22.

Deep moist woods, about the roots of trees, Canada and throughout the United States! to Florida! and Louisiana! (Also in Mexico, ex *DC.*) June. (November to April in the Southern States. *Ell.*)—Stems slender, branching, 6–12 inches long. Leaves on slender petioles, half an inch or more in diameter, dark green and shining, usually with a pale longitudinal line, of a firm texture, turning blackish in drying. Corolla about half an inch long; the limb sometimes 3-cleft (and then triandrous), occasionally 5–8-cleft, but never (we believe) with more than 4 stamens. Berries about a third of an inch in diameter, broader than long, crowned with the persistent teeth of two calyces, bright red, edible but insipid, persistent through the winter and until the plant flowers again.—*Partridge-Berry.*

Subtribe 3. GUETTARDEÆ, *DC.* (excl. gen.)—Flowers distinct. Æstivation of the corolla usually contorted. Albumen fleshy.—Tropical trees or shrubs.

11. GUETTARDA. *Linn.; Vent. choix. t.* 1; *Gærtn. fr.* 1. *t.* 36; *A. Rich. mem. l. c. p.* 121.

Calyx-tube ovate or globose; the limb tubular, persistent or deciduous, truncate or irregularly toothed. Corolla hypocrateriform; the tube cylindrical; lobes 4–9, oval-oblong. Anthers 4–9, nearly sessile in the throat of the corolla, linear. Stigma capitate, rarely 2-lobed. Fruit drupaceous, subglobose or ovate, usually crowned with the persistent limb of the calyx: endocarp bony, obtusely angled, 4–9-celled; the cells 1-seeded. Seeds somewhat terete.—Small trees or shrubs (mostly tropical American); with ovate or lanceolate, or rarely cordate leaves. Stipules lanceolate, deciduous. Peduncles axillary, once or twice dichotomous; the flowers sessile in the forks and unilateral on the branches of the peduncle.

1. *G. elliptica ?* (Swartz): leaves ovate and elliptical, rather obtuse, mucronulate, hairy on both surfaces; petioles short; peduncles usually shorter than the leaves; cymes 2-cleft; flowers tetramerous; tube of the corolla silky-hirsute, three times as long as the calyx; limb of the calyx at length deciduous.—*Swartz, prodr. p.* 59*? DC. prodr.* 4. *p.* 457?

Key West, Florida, *Mr. Blodgett!*—A shrub; the younger branches pubescent. Leaves 1–2 inches long, rather acute at the base, the lower surface more hairy than the upper: petiole 2–3 lines long. Peduncles sometimes rather longer than the leaves, twice or thrice dichotomous. Flowers about one-third of an inch long. Calyx truncate, often notched on one side of the orifice, with 2 subulate bracteoles at the base. Corolla dull crimson internally. Style filiform, included: stigma entire. Immature fruit ovate.—We have not seen authentic specimens of G. elliptica, the species which agrees most nearly with ours; but it seems to differ in the leaves being smoothish above, and in the 2-lobed stigma.

12. ERITHALIS. *P. Browne, Jam. t.* 17, *f.* 3; *Linn.*; *Lam. ill. t.* 159; *Gærtn. fr. t.* 26; *A. Rich. mem. l. c. p.* 133; *DC. prodr.* 4. *p.* 465.

Calyx-tube ovate; the limb short, 5-toothed. Corolla somewhat rotate, 5-parted; the segments linear. Stamens 5: filaments subulate, inserted into the base of the corolla: anthers linear-oblong. Style stout, as long as the filaments: stigma bilamellate, the lobes agglutinated. Ovary 5–10-celled, with a single pendulous ovule in each cell. Drupe globose, somewhat fleshy, sulcate, with 5–10 bony nucules.—Glabrous (chiefly West Indian) shrubs. Leaves petioled, somewhat coriaceous. Stipules persistent, short and broad. Flowers in paniculate cymes from the axils of the uppermost leaves.

1. *E. fruticosa* (Linn.): leaves obovate; panicles pedunculate; fruit 8–10-sulcate, crowned with the truncate limb of the calyx.—*DC. prodr. l. c.* E. odorifera, *Jacq. stirp. Amer. p.* 72. *t.* 173, *f.* 23.

Southern Florida, *Dr. Leitner!*—Leaves about 2 inches long, obtuse, the lateral veins indistinct, abruptly tapering at the base into a short petiole. Stipules with a small mucronate point. Cymes 10–15-flowered: flowers odorous, crimson?

TRIBE IV. HAMELIEÆ. *A. Rich.*, *DC.*

Fruit baccate, 3–many-celled; the cells many-seeded. Albumen fleshy.—Trees or shrubs. Stipules between the (rarely verticillate) petioles.

13. HAMELIA. *Jacq. stirp. Amer. p.* 71. *t.* 50, *& ic. rar. t.* 335; *Lam. ill. t.* 155; *Gærtn. fr. t.* 191 *&* 196.

Calyx-tube oval; the lobes 5, short, erect, acute, persistent. Corolla tubular, somewhat 5-angled, slightly 5-lobed at the summit; the lobes equal, scarcely spreading. Stamens 5, inserted into the middle of the corolla, included: anthers oblong-linear. Stigma obtuse, somewhat 5-angled. Berry oval, 5-furrowed, 5-celled; the cells membranaceous, many-seeded. Seeds minute, compressed.—Tropical American shrubs. Leaves often ternately or quaternately verticillate, petioled. Stipules one on each side, lanceolate-subulate. Flowers red or orange, showy, in di-trichotomous or scorpioid cymes.

1. *H. patens* (Jacq.): leaves ternate, oval-oblong, acuminate at each end, villous-pubescent underneath; cymes colored, di-trichotomous, in a terminal pedunculate umbel; corolla cylindrical. *DC.—Jacq. stirp. Amer. l. c.; Smith, exot. bot. t.* 24; *DC. prodr.* 4. *p.* 441. H. coccinea, *Swartz, prodr. p.* 46. Duhamelia patens, *Pers. syn.* 1. *p.* 203.

Key West, Florida, *Mr. Bennett!*—A shrub 8–10 feet high, with a trunk 3–4 inches in diameter; the younger branches minutely pubescent. Leaves 2–4 inches long, and an inch or more in diameter, somewhat glabrous above. Cymes usually forked, with the flowers sessile and unilateral on the divisions; the common peduncle trifid. Flowers bright red, very handsome. Berry about one-fourth of an inch long. Seeds oval, scrobiculate, only one (in our specimen) ripening in each cell.

TRIBE V. EUCINCHONEÆ. (Cinchonaceæ, *DC.*)

Fruit capsular, 2-celled; the cells many-seeded. Seeds winged. Albumen fleshy.—Trees or shrubs. Stipules between the petioles.

14. EXOSTEMMA. *DC. diss.* 1806; *A. Rich. mem. l. c. p.* 280.

Exostema, *Pers.* (§ of Cinchona), *L. C. Richard.*

Calyx-tube obovate; the limb 5-toothed. Corolla with a long terete tube; the segments of the 5-parted limb linear, revolute, valvate in æstivation. Stamens 5, inserted into the corolla near the base, much exserted: anthers narrowly linear. Style filiform, clavate at the summit: stigma entire or somewhat 2-lobed. Capsule coriaceous, opening at the summit by septicidal dehiscence. Seeds flat, with a circular winged margin, retrorsely imbricated.—Trees or shrubs of tropical America, (the bark febrifugal or somewhat emetic; but destitute of Quinia and Cinchonia, according to St. Hilaire), usually glabrous. Stipules one on each side. Peduncles axillary or terminal.

1. *E. Caribæum* (Rœm. & Schult.): leaves ovate-lanceolate, acuminate, glabrous; pedicels axillary, 1-flowered, about the length of the petiole; teeth of the calyx very short.—*Rœm. & Schult. syst.* 5. *p.* 18; *DC. prodr.* 4. *p.* 359. Cinchona Caribæa, *Jacq. stirp. Amer. t.* 179, *f.* 65, *& obs.* 2. *t.* 17; *Gærtn. fr. t.* 33; *Lamb. Cinch. t.* 4; *Andr. Bot. rep. t.* 481. C. Jamaicensis, *Wright, in phil. trans.* 67. *p.* 504, *t.* 10.

Key West, *Mr. Blodgett!*—A glabrous shrub. Leaves 1½–2 inches long, somewhat coriaceous. Stipules broad and very short, with a subulate point. Flowers crimson, odorous, showy. Pedicels half an inch long. Calyx-teeth rather acute. Corolla nearly 2 inches long; the tube about the length of the linear segments. Anthers half an inch in length and very slender. Style much exserted: stigma entire.—The bark of this plant is used in the West Indies as a substitute for Cinchona bark.

15. PINCKNEYA. *Michx. fl.* 1. *p.* 103, *t.* 13; *A. Rich. mem. l. c. p.* 277.

Calyx-tube oblong-turbinate; four of the segments of the deciduous 5-parted limb linear-lanceolate, the fifth usually dilated into a large colored leaf. Tube of the corolla cylindrical; the lobes of the 5-parted limb linear-oblong, recurved-spreading, somewhat imbricate in æstivation. Stamens 5, inserted into the corolla near the base, exserted: anthers oblong. Style filiform: stigma obtusely 2-lobed. Capsule subglobose, coriaceo-chartaceous, 2-valved, loculicidal. Seeds numerous, horizontal, in a double series, flat, with a reticulated membranaceous wing. Embryo large, straight: cotyledons foliaceous, concave.—A large shrub or small tree; the young branches &c., hirsute-tomentose. Stipules one on each side, linear-subulate, caducous. Flowers large, in small cymes, which are terminal or in the axils of the upper leaves. Corolla purplish inside, hirsute-canescent externally.

P. pubens (Michx.! l. c.)—*Michx. f. sylv.* 1. *p.* 260, *t.* 49; *Pursh, fl.* 1. *p.* 158; *Ell. sk.* 1. *p.* 269; *Nutt.! gen.* 1. *p.* 137; *DC. prodr.* 4. *p.* 366; *Bart. fl. Amer. Sept. t.* 7; *Audubon, birds of Amer. t.* 165. P. pubescens, *Gærtn. f. fruct.* 3. *p.* 80, *t.* 194. Pinknea pubescens, *Pers. syn.* 1. *p.* 197. Cinchona Caroliniana, *Poir. dict.* 6. *p.* 40.

Swamps, S. Carolina! to Middle Florida! May–June.—Stems or trunks often clustered. Leaves oval, acute or acuminate at both ends, on short petioles, nearly glabrous above, pubescent or somewhat tomentose beneath, 4–8 inches long, and 3 or 4 broad. Limb of the calyx somewhat colored; one (or sometimes two) of the segments dilated into an oval membranaceous (rose-colored) petioled leaf, two or three inches in length. Corolla an inch and a half long; the segments shorter than the tube. Capsule about half an inch in diameter; the dehiscence loculicidal and at length partly septicidal also.—This genus is doubtless sufficiently distinct from Mussænda, to which Jussieu joined it, and with which it accords in habit. The bark has the taste and medicinal properties of Cinchona, and probably contains the same or a new alkaline principle.

TRIBE VI. HEDYOTIDEÆ. *Cham. & Schlecht.*

Fruit capsular, 2-celled, usually loculicidal (rarely somewhat membranaceous and indehiscent); the cells several-many-seeded. Seeds wingless. Albumen fleshy. Æstivation of the corolla mostly imbricated or contorted.—Herbs or shrubs. Stipules between the petioles, either one or two on each side, or frequently united with the petioles into a membranaceous sheath, which is often fringed with bristles, as in Spermacoceæ.

16. HEDYOTIS. *Linn.; Lam. ill. t.* 62; *A. Rich. mem. l. c.*; *Hook. fl. Bor.-Am.* 1. *p.* 286; *W. & Arn. prodr. Ind. Or.* 1. *p.* 405; *Endl. gen. p.* 548, *& iconogr. t.* 89.

Hedyotis, Houstonia, & Oldenlandia, *Linn.*—Anotis &c., *DC.*

Calyx-tube ovate or globose; the limb 4- (rarely 5-?) toothed or cleft, persistent. Corolla infundibuliform, hypocrateriform, or rotate, 4- (rarely 5-?) lobed; the lobes imbricate in æstivation. Stamens as many as the lobes of the corolla, inserted either in the throat or towards the base of the tube. Stigma usually 2-cleft or 2-lobed. Capsule globose, ovoid, or obcordate, mostly coriaceous, the summit often free from and exserted beyond the calyx, 2-celled, opening across the summit by loculicidal dehiscence, and at length often slightly septicidal. Seeds few or numerous, on placentæ (either ascending or horizontal) which project into each cell, with a reticulate-punctate or scrobiculate testa.—Herbs, or suffruticose plants. Stipules connate with the petiole on both sides, entire, toothed, or sometimes fringed with bristles. Flowers axillary or terminal, solitary, cymulose, or glomerate. Plant often turning blackish in drying.

§ 1. *Corolla hypocrateriform; the tube much longer than the teeth or segments of the calyx (which are distant in fruit); the limb glabrous: stamens and style diœcio-dimorphous,* i. e., *the stamens in one plant inserted in or near the throat of the corolla, and often somewhat exserted, and then the style included; in the other, the stamens inserted into the tube of the corolla near the base, and the style exserted: filaments short: anthers linear or oblong: capsule somewhat didymous or 2-lobed, the very broad summit free from the calyx, loculicidal: seeds several* (8–20 *in each cell*), *scrobiculate or reticulated, oval or roundish, with a deep hollow on the face: small annual or sometimes perennial herbs: stipules entire, minute: peduncles axillary or terminal, one-flowered.*—Houstonia, Linn. hort. Cliff. (Species of Anotis, *DC.*, *Arn.? Endl.* Poiretia, *Gmel.* Panetos, *Raf.?*)

The name Houstonia must be retained for whatever section shall include H. cærulea, on which that genus was founded in the *Hortus Cliffortianus.* This, if considerably extended, would probably include a large portion of De Candolle's species of Anotis, but in a more restricted sense perhaps very few. Hedyotis (Anotis) gentianoides, *Endl. iconogr. t.* 89, certainly belongs to this section.

1. *H. minima:* annual, glabrous, at length dichotomous and depressed; leaves linear-spatulate, with a long attenuate base; peduncles not exceeding the leaves; capsule obcordate, free only at the summit: seeds oval, nearly smooth, with a broad cavity on the face.—Houstonia minima, *Beck, in Sill. jour.* 10. *p* 262.

Banks of rivers and prairies of the South Western States. Near St. Louis, Missouri, *Beck, Dr. Engelmann!* New Orleans, *Nuttall!* Arkansas and Western Louisiana, *Nuttall! Dr. Pitcher! Dr. Hale!* March–May.—Plant less than an inch high when it begins to flower; when old 3–4 inches high, the peduncles becoming axillary or alar. Leaves 4–5 lines long, scarcely a line wide. Corolla rose-color or pale purple, large for the size of the plant, but smaller than in H. cærulea; the tube narrowed at the base, as long as the semiovate-oblong lobes, at length about thrice the length of the calyx-segments. Seeds 10–15 in each cell; the cavity of the face wider than in the following, with a longitudinal central ridge.

2. *H. cærulea* (Hook.): annual or biennial, glabrous; stems numerous, erect or spreading, dichotomous; leaves oval-spatulate or oblanceolate, the radical and lower ones tapering to the base or somewhat petioled, usually minutely ciliate; peduncles filiform, elongated, spreading; capsule very broadly obcordate, free above the middle; seeds roundish, scrobiculate.—*Hook.! fl. Bor.-Am.* 1. *p.* 286*: Darlingt. fl. Cest. p.* 104*;* not of *Wight & Arn.* Houstonia cærulea, *Linn.! spec.* 1. *p.* 105*; Bot. mag. t.* 370*; Pursh, fl.* 1. *p.* 106*; Ell. sk.* 1. *p.* 192*; Torr.! fl.* 1. *p.* 172*; Bart. fl. Amer. Sept. t.* 34, *f.* 1. H. pusilla. "*Schœpf, it.* 2. *p.* 306"; *Gmel. syst.* 1. *p.* 236. H. Linnæi *α.* elatior, *Michx.! fl.* 1. *p.* 85. Chamæjasme inodora &c. *Pluk. alm. t.* 97, *f.* 9.

β. minor: smaller; the branches and peduncles divaricate or spreading; flowers smaller.—*Hook. l. c.* Houstonia Linnæi *β.* minor, *Michx. l. c.* H. patens, *Ell. l. c.*

Canada! (from lat. 48°) to Louisiana! on grassy banks, wet rocks &c. *β.* Mostly in dry soil throughout the Southern States! April–(Feb. or March in the Southern States) Sept.—Stems 3–6 inches high, branching from the base, sparingly dichotomous. Radical leaves often minutely hispid on the surfaces as well as the margin, usually 3–5 lines long. Peduncles 1–2 inches long in fruit. Corolla 4–5 lines long (in β. often much smaller), blue or blue and white (sometimes all white), with a yellowish throat; the tube 3 or 4 times longer than the oblong-lanceolate calyx-segments; the lobes somewhat ovate and acute, shorter than the tube. Capsule, when mature, more than half free, dehiscent down to the calyx. Seeds 8–15 in each cell; the cavity of the face circular.—*Dwarf Pink. Bluets.*

3. *H. serpyllifolia:* perennial, nearly glabrous; stems numerous or cæspitose, filiform, procumbent or creeping, elongated; leaves roundish-ovate, abruptly narrowed into a petiole, often slightly cordate, ciliolate; peduncles terminal, very long; lobes of the corolla about the length of the tube.—Houstonia serpyllifolia, *Michx.! fl.* 1. *p.* 85; *Pursh! fl.* 1. *p.* 106. H. tenella, *Pursh, l. c.*

About springs, on the high mountains of Carolina, *Michaux! &c.* Mountains of North Carolina, *Mr. M. A. Curtis!* May.—The filiform stems, in the specimens of Mr. Curtis, are 6 to 10 inches long; and the plant has quite the habit of Arenaria Balearica, as Michaux has remarked: the leaves, including the slender petioles, do not exceed 3 lines in length; the peduncles 1–2 inches long; the corolla about as large as in H. cærulea, with the lobes broadly oval. We know not whether the root is really perennial. From the same region, Mr. Curtis has sent us specimens of H. cærulea (apparently), with the leaves nearly of the same shape and almost as distinctly petioled, but they belong to a much stouter and nearly erect, or diffuse plant.—The prior Hedyotis serpyllifolia of Poiret, is referred to H. trinervia by Wight & Arnott.

4. *H. rotundifolia:* perennial; stems branched, creeping; leaves roundish or broadly oval, ciliate when young, thickish, abruptly narrowed into a short petiole; peduncles axillary and shorter (and sometimes terminal and longer) than the leaves; capsule free above the middle, very broad, emarginate, few-seeded; seeds roundish, scrobiculate.—Houstonia rotundifolia, *Michx.! fl.* 1. *p.* 85; *Pursh! l. c.; Ell. l. c.* Panetos rotundifolia, *Raf.* Anonymos procumbens, *Walt. Car. p.* 86. Poiretia procumbens, *Gmel. syst. p.* 263. Anotis (Panetos) rotundifolia, *DC.! prodr.* 4. *p.* 433.

Sandy soil, S. Carolina! to Florida! and Louisiana! flowering nearly all the year.—Leaves persistent, at length nearly glabrous, about half an inch long. Flowers (white *Ell.*) about as large as in H. cærulea; the peduncles nodding in fruit. Lobes of the corolla shorter than the slender tube. Capsule splitting almost to the base.—The Hedyotis rotundifolia of Sprengel is also referred to H. trinervia.

§ 2. *Corolla infundibuliform, often hairy or villous inside; the tube longer than the teeth of the calyx, which are distant in fruit: stamens and style diœcio-dimorphous, and alternately included or more or less exserted (as in* § 1)*: anthers linear: capsule subglobose or ovoid, the upper half free from the calyx: seeds rather few* (4–15 *in each cell*) *oval, with a deep hollow on the face: small erect perennial herbs, often corymbosely branched; stipules entire: flowers in terminal di-trichotomous cymules.*—AMPHIOTIS, DC.[*] (§ of Anotis.)

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[*] In De Candolle's sectional character, the phrase "Corollæ hypocraterimorphæ" occurs: but the only species of the section is said to have an *infundibuliform* corolla.

5. *H. purpurea:* stems erect or ascending, tetragonal, pubescent (at least when young) with spreading hairs; leaves ovate or ovate-lanceolate, closely sessile, 3–5-nerved from the base, glabrous or sprinkled with scattered hairs above, the veins of the lower surface and margins pubescent; umbelliform cymules 3–7-flowered, often clustered; lobes of the calyx subulate-linear, three or four times the length of the tube, and manifestly longer than the subglobose capsule.—H. umbellata, *Walt. Car. p.* 85? Houstonia purpurea, *Linn.! spec.* 1. *p.* 105; *Pursh! fl.* 1. *p.* 167; *Ell. sk.* 1. *p.* 193; *Torr.! fl.* 1. *p.* 173. H. varians, *Michx.! fl.* 1. *p.* 86, in part. H. pubescens, *Raf. in med. repos.* (*hex.* 2) 5. *p.* 361? Anotis lanceolata, *DC. prodr.* 4. *p.* 433?

β. lobes of the calyx lanceolate-linear, almost equalling the corolla; leaves lanceolate.—Houstonia macrosepala, *Nutt.! mss.* Hedyotis lanceolata, *Poir. suppl.* 3. *p.* 14?

Woods and river banks, Maryland! Virginia! Western Pennsylvania, and Ohio! to Alabama! Tennessee! and Missouri! May–July.—Stems usually several from the same root, branching, about a foot high. Leaves 1–2 inches long, in size and shape not unlike those of Galium circæzans, rounded at the base, rather acute; varying however to lanceolate; the upper surface either hairy or glabrous. Stipules ovate, scarious. Corolla purple, about 4 lines long, slightly hairy inside; the tube usually longer than the lobes of the calyx. Stamens all exserted in some specimens, all included in others; the filaments in the former case coherent with the tube of the corolla to the summit, but they may sometimes be partially detached without laceration. Capsule free only at the summit; the cells several-seeded.

6. *H. ciliolata* (Torr.): stems usually numerous and somewhat cæspitose, nearly glabrous; leaves rather thick, obscurely 1-nerved; the cauline ones oblanceolate or linear-oblong, mostly obtuse, sessile, minutely ciliate; the radical and lowest cauline ones oval-spatulate, tapering into a petiole, ciliate with rigid hairs; cymules mostly 3-flowered, in corymbose clusters; peduncles and pedicels short; lobes of the calyx lanceolate-subulate, about the length of the subglobose capsule.—*Torr.! in Spreng. cur. post. p.* 40; *DC. prodr.* 4. *p.* 422; *Hook. l. c.* Houstonia ciliolata, *Torr.! fl.* 1. *p.* 174. H. Canadensis, *Muhl. in herb. Willd.!* H. serpyllifolia, *Graham, in bot. mag. t.* 2882, not of *Michx.*

Banks of rivers and lakes, Canada (*Pursh!* in *herb. Lamb.*), Michigan! Falls of Niagara! and on the shore of Lake Ontario! nearly confined to limestone formations. Kentucky, *Dr. Short!* May–July.—Stems 4–6 inches high, often with slightly margined angles. Radical leaves in rosulate tufts, somewhat coriaceous; the cauline pairs rather few and distant, shorter and broader than in H. longifolia: the flowers much more numerous than in that species, clustered, lilac or pale purple. Stipules scarious, roundish, rather large. Calyx-lobes about half the length of the tube of the corolla. Capsule about half free; the cells 8–9-seeded.

7. *H. longifolia* (Hook.): glabrous; stems erect, 4-angled with decurrent lines; leaves linear or oblong-linear, acute or obtuse, tapering to the base, 1-nerved; the radical ones oval or oblong, narrowed into a petiole; cymules 2–3-flowered, somewhat paniculate; the pedicels at first short, at length nearly equal and longer than the fruit; lobes of the calyx subulate-lanceolate, mostly longer than the tube, but shorter than, or scarcely exceeding, the subglobose capsule.—*Hook.! fl. Bor.-Am.* 1. *p.* 286. (excl. syn. *Michx.*) Houstonia longifolia, *Gærtn. fr.* 1. *p.* 226, *t.* 49, *f.* 8 (fruit); *Willd.! spec.* 1. *p.* 583; *Ell. l. c.*; *Torr.! l. c*; *Bigel. fl. Bost. ed.* 2. *p.* 53; *Hook. bot. mag. t.* 3099. H. angustifolia, *Pursh! fl.* 1. *p.* 106, not of *Michx.*

β. tenuifolia: stem and numerous divaricate branches very slender;

peduncles and pedicels filiform; flowers small.—Houstonia tenuifolia, *Nutt. gen.* 1. *p.* 287.

Shady banks &c., Canada! (from the Saskatchawan) and Northern and Western States! to the upper and middle country of the Southern States! β. Ohio! and mountains of N. Carolina! and Tennessee to Arkansas! June–July.—Stems 5–10 inches high, usually numerous from the same root, obscurely 4-sided, but with the angles, or 2 of them, margined with very narrow sharp decurrent lines. Leaves 9–15 lines long, 2–3 lines broad, glabrous, or the margins very slightly scabrous. Stipules scarious, small, ovate or triangular. Flowers rather smaller than in the preceding, pale purple or nearly white. Corolla much longer than the lobes of the calyx. Capsule nearly half free; the cells about 10-seeded. Stamens and style varying inversely, as in the preceding species.—This is probably distinct from H. purpurea, the narrow-leaved forms of which sometimes approach it very nearly; although the length of the calyx-lobes is perhaps not absolutely invariable. It seems to pass insensibly into the H. tenuifolia, *Nutt.*; which is, however, a remarkably slender plant, with more distant narrowly linear leaves, and very slender and spreading branches and pedicels, the latter several times longer than the (about 8-seeded) fruit.

8. *H. stenophylla:* slightly suffruticose at the base, glabrous; stems erect or assurgent, much branched; leaves very narrowly linear, often with smaller ones fasciculate in the axils, 1-nerved, acute, tapering to the base; flowers very numerous, in 3–4 times di-trichotomous cymules, corymbose at the extremity of the branches; pedicels short, the central flower of each cluster almost sessile; lobes of the calyx subulate, as long as the tube; capsule turbinate.—Houstonia angustifolia, *Michx.! fl.* 1. *p.* 85. (not Hedyotis angustifolia. *Cham. & Schlecht.*) H. fruticosa & H. rupestris, *Raf.! monogr. Houst. in ann. gen.* 1820. (not Hedyotis rupestris, *Swartz.*)

Banks of rivers, and prairies; sea-coast of Florida, *Michaux!* (Georgia? *Elliott!*) to Kentucky! Missouri! Louisiana! Arkansas! and Texas! June–July.—Stem 10 inches to 2 feet high. Leaves an inch or more in length. Flowers very numerous, usually fastigiate-corymbose, pale purple: the tube of the corolla thrice the length of the calyx-teeth (which are furnished with a few very minute bristly hairs); the oblong segments and throat very villous inside. Filaments and style either exserted or included inversely, as in the other species of the section. Capsule small, acute at the base; the summit only free. Seeds 5–10 in each cell, oval, black.—Readily distinguished by its turbinate fruit. In the other species of this section, the pedicels (2–7) are equal or nearly so, and more or less elongated in fruit: in this, the central flower of each cymule is nearly sessile.

§ 3. *Corolla rotate, much shorter than the lanceolate teeth of the calyx, which are spreading and with the sinuses acute in fruit: stamens and style very short: anthers roundish-ovate: capsule ovoid, wholly coherent with the tube of the calyx, loculicidally dehiscent across the summit: seeds very numerous and minute* (50–60 *in each cell*), *angular: herb perennial, with the habit of* Spermacoce *or* Diodia: *stipules mostly bimucronate or bisetose on each side: flowers solitary or* 3–4 *together in the axils of the leaves, almost sessile.*—DIODELLA.

9. *H. Boscii* (DC.): herbaceous, or suffrutescent at the base, much branched, diffuse, glabrous; branches slender; leaves linear, acute at each end, obscurely 1-nerved; stipules very small; flowers on very short pedicels; teeth of the calyx triangular-subulate, spreading or recurved, shorter

than the slightly compressed roundish-ovoid fruit.—*DC.! prodr.* 4. *p* 420; *Hook.! compan. to bot. mag.* 1. *p*. 48.

Borders of ponds and streams, and in open grounds, Carolina (*Bosc!*) to Louisiana, *Tainturier! Drummond! Dr. Carpenter!* Alexandria, *Dr. Hale!* and on the banks of the Sabine, *Dr. Leavenworth!* July–Sept.—Stems 6–10 inches long. Leaves about an inch in length. Flowers minute; the fruit scarcely more than a line long, minutely scabrous, crowned with the rather short calyx-teeth. Corolla (purplish, *Leavenworth*,) with scarcely any tube. The plant turns blackish in drying.—Somewhat intermediate between the sections Scleromitrion & Oldenlandia of Wight & Arnott.

§ 4. *Corolla rotate, much shorter than the teeth of the calyx, which are erect in fruit, with the sinuses acute: stamens scarcely longer than the lobes of the corolla: anthers subglobose: style nearly none: stigmas oblong, obtuse: capsule globose-compressed, wholly coherent with the tube of the calyx, emarginate, loculicidally dehiscent across the summit: seeds very numerous and minute* (60 *or more in each cell*), *angular: herb annual, with the habit of* Elatine: *stipules bisubulate on each side: flowers solitary or mostly glomerate in the axils of the leaves.*—ELATINELLA.

This and the preceding sections should probably be considered mere divisions of the subgenus Oldenlandia, whenever that group shall be definitely characterized.

10. *H. glomerata* (Ell.): stems diffuse or somewhat erect, hirsute-pubescent, branching: leaves oblong or elliptical-lanceolate, narrowed at the base, or slightly petioled, nearly glabrous; flowers mostly glomerate in the axils; tube of the calyx hirsute, shorter than the ovate or oblong foliaceous lobes.—*Ell. sk.* 1. *p.* 187; *Torr.! fl.* 1. *p.* 171; *DC.! prodr.* 4. *p.* 421. H. auricularia, *Walt. Car. p.* 85, not of *Linn.* H. uniflora, *Lam.?* H. glomerata & H. Virginica, *Spreng. syst.* 1. *p.* 412. Oldenlandia uniflora, *Linn.! spec.* 1. *p.* 119. O. glomerata, *Michx.! fl.* 1. *p.* 83; *Pursh, fl.* 1. *p.* 102.

Margin of swamps, and especially brackish marshes, New York! and New Jersey! to Florida! and Louisiana! June–Oct.—Stem 2–18 inches high. Leaves half an inch to an inch long, often slightly pubescent, somewhat 3-nerved at the base, slightly veiny. Stipules on each side cleft nearly to the base into 2 subulate divisions, which are as long as the petioles or narrowed base of the leaves. Flowers small, seldom solitary or three together, and then pedicellate, usually in small dense clusters. Corolla many times shorter than the limb of the calyx, white; the lobes semiovate. The plant does not turn blackish in drying.

§ 5. (An gen.?) *Flowers pentamerous: corolla infundibuliform, 5-lobed, somewhat longer than the 5 lanceolate-subulate teeth of the calyx, which are erect in fruit, with the sinuses obtuse; stamens 5, included, inserted towards the base of the corolla: anthers oblong: style as long as the stamens: capsule turbinate, wholly coherent with (and rather shorter than) the tube of the calyx, loculicidal at the summit: placentæ pedicellate from the middle of the septum, horizontal: seeds very numerous, angular: herb perennial, dichotomous: stipules 2–4-subulate on each side: flowers axillary, somewhat cymulose.*—PENTOTIS.

11. *H. Halei:* glabrous; stem diffuse, dichotomous; leaves oval-oblong,

somewhat fleshy, rather acute, narrowed into a slight petiole; cymules 3-5-flowered, scarcely pedunculate; shorter than the turbinate capsule.

Red River, near Alexandria, Louisiana, *Dr. Hale!*—Stems 8-10 inches long, branched from the base. Leaves an inch to an inch and a half long, half an inch broad, shining underneath. Stipules broad, connate with the petioles, membranaceous, truncate, with 2-4 short subulate appendages on each side. Pedicels scarcely longer than the calyx. Corolla white, about twice the length of the calyx-teeth. Lobes of the stigma linear-oblong, hairy. Seeds minutely roughened.—This plant appears to accord with Hedyotis (Oldenlandia), except in its pentamerous flowers.

Houstonia grandiflora, pusilla, & ciliata, *Raf. monogr. Houst., in ann. sci. gen.* 1820, (his subgenus *Edrissa*, which corresponds to Houstonia proper,) are doubtless synonyms of H. cærulea. Houstonia obtusifolia, oblongifolia, and heterophylla, *Raf. l. c.* belong doubtless to H. longifolia and H. ciliolata.

SUBORDER III. LOGANIEÆ. *R. Br.* (Loganiaceæ, *Lindl.*, *Endl.* in part.)

Leaves opposite. Stipules between the petioles, sometimes nearly obsolete. Æstivation of the corolla valvate or convolute. Ovary free from the persistent calyx, or nearly so.—Shrubs or herbs, natives of warm or tropical regions.

In thus appending Logania and its nearest allies to Rubiaceæ (which seems inevitable when we compare Ophiorhiza with Mitreola, a portion of Hedyotis with Cœlostylis, &c.), we trust we are following the indications thrown out by the most profound botanist who proposed the order or tribe (*Appx. to Flinders*, 2. *p.* 564, and *Tuckey's Congo*, *p.* 448); although it is still no less true than when Mr. Brown first made the remark, that there are no satisfactory characters known to distinguish Rubiaceæ from Apocynaceæ.

17. CŒLOSTYLIS. *Torr. & Gr., in Endl. decad., & iconogr. t.* 101.

Calyx deeply 5-parted. Corolla infundibuliform; the limb 5-cleft, valvate in æstivation, the margins slightly reduplicate. Stamens 5, inserted near the middle of the tube, included: anthers oblong-linear. Ovary 2-celled, free from the calyx, seated on a small 2-lobed disk: ovules 10 or more in each cell, peltate, covering the somewhat projecting placentæ, which arise from near the base of each cell: style included: the lower portion solid, persistent; the upper half membranous, tubular, deciduous by an articulation; the summit cylindrical-subclavate, villous with rigid collecting hairs: stigma undivided. Capsule didymous, composed of two subglobose rather coriaceous carpels, which at length separate from each other and from the indurated disk, opening elastically by loculicidal dehiscence. Seeds 6-8 on each globose placenta, wingless, angular, scrobiculate. Embryo nearly the length of the fleshy albumen, almost straight: cotyledons oblong.—Herbaceous, probably perennial plants (natives of Florida and Texas), with somewhat angular stems. Leaves opposite, ovate or oblong-lanceolate, somewhat veined, slightly petioled, with small entire stipules between the petioles. Flowers small, solitary or somewhat cymulose, axillary, dichotomal, and terminal.

This genus was characterized and published by the accomplished Endlicher, from an insufficient specimen of the Florida plant, the fruit of which is still a desideratum. But a second species of the genus fortunately occurs in Drummond's Texan Collection (*no.* 321 of *3rd. coll.*), from which we have completed its carpological history. —The venation of the corolla is somewhat curious, although nearly the same as in many Rubiaceæ. There are about 20 primary veins, three of which are continued into each segment and somewhat ramified towards its summit: there is also a vein corresponding with each sinus, occupying the situation of the primary veins in Compositæ, and forked near the sinus in the same manner, one division passing into each segment and coursing near the margin, but disappearing by ramification before it reaches the summit.—The nearest alliance of Cœlostylis is perhaps with Logania § Stomandra, *R. Br.*; from which it differs abundantly in the æstivation of the corolla, and the insertion of the stamens.

1. *C. loganioides* (Torr, & Gr, l. c.): leaves ovate and obovate, somewhat coriaceous; the upper surface with the margins and the summit of the stem somewhat puberulent-scabrous.

Near Fort King, Florida, *Dr. Burrows!*—Stem, or branches, slender, 6–10 inches long, ascending, glabrous except the upper part and about the nodes, somewhat 4-angled by lines decurrent from the leaves; two of the angles more distinct. Leaves about half an inch long, scarcely petioled, rather obtuse, marked with a few strong oblique veins. Flowers apparently three together at the summit (the central one on a short pedicel), or solitary and axillary. Sepals almost distinct, linear-subulate, less than half the length of the corolla, minutely serrulate under a lens. Corolla about 4 lines long, glabrous, probably white: the lobes ovate-lanceolate, acutish. Filaments scarcely longer than the anthers: pollen triangular. Ovary ovoid. Fruit unknown.

2. *C. Texana:* leaves lanceolate and oblong-lanceolate, membranaceous, glabrous; stem dichotomous at the summit.

Texas, *Drummond!*—Stem ascending, 12–18 inches high, 4-angled with decurrent lines, di-trichotomous at the summit, often bearing 4 leaves in a whorl at the first bifurcation. Leaves 1–2 inches long, 6–8 lines wide, rather acute at each end; the veins few and nearly simple. Stipules ovate, those near the base of the stem almost obsolete. Flowers dichotomal or terminal, solitary or three together; the central ones on very short pedicels. Calyx, corolla, stamens, and style as in the preceding species, except that the hairy portion of the latter is shorter. Capsule about 3 lines wide, composed of two globose glabrous cocci, which cohere by a small portion of their face, separating from each other at maturity, and from the indurated disk, which, with the calyx, remains attached to the summit of the pedicel. Seeds strongly pitted.

18. MITREOLA. *Linn. hort. Cliff.; R. Br. prodr.* 1. *p.* 450 (note); *A. Rich. in mem. soc. hist. nat. Par.* 1. *t.* 3.

Ophiorhiza Mitreola, *Linn. spec.*—Cynoctonum, *Gmel.*

Calyx 5-parted. Corolla urceolate-infundibuliform, exceeding the calyx, bearded in the throat; the lobes of the 5-parted limb ovate, 3-nerved. Stamens 5, included, inserted into the lower part of the tube of the corolla: anthers roundish. Ovary 2-celled, coherent with the calyx at the base: styles short, separate at the base, united above: stigmas also united, small. Capsule almost entirely free from the calyx, 2-horned or deeply 2-lobed, mitre-shaped, 2-celled, each lobe dehiscent near the summit by the ventral suture; placentæ stipitate from near the summit of the dissepiment, many-seeded. Seeds very small, oval, anatropous, minutely scrobiculate under a lens. Embryo nearly the length of the fleshy albumen, straight: radicle cylindrical: cotyledons short, ovate.—Annual glabrous herbs (natives of tropical America and the Southern United States), with opposite oval or lanceolate leaves, and very small entire stipules between the petioles. Flowers small, white, in terminal scorpioid cymes.

Mitreola appears to differ from Mitrasacme, *Labill.* chiefly in its pentamerous flowers.—In both species of this genus, and also in Polypremum, the pollen-tubes are often so copious, even in dried specimens, as to fasten the anthers strongly to the stigma.

1. *M. petiolata:* leaves membranaceous, lanceolate or oval-oblong, acute, narrowed at the base into a petiole.—Ophiorhiza Mitreola, *Linn. spec.* 1. *p.* 150; *Swartz, obs. p.* 59, *t.* 3, *f.* 2. O. lanceolata, *Ell.! sk.* 1. *p.* 238. Anonymos petiolata, *Walt. Car. p.* 108. Cynoctonum petiolatum, *Gmel. syst. p.* 4.

Damp shady soil, Virginia! to Florida! and west to the borders of Texas! June–Sept.—Stem 1–2 feet high, somewhat branching. Leaves 1–3 inches long. Peduncles terminal and from the axils of the upper leaves, once or twice dichotomous or trichotomous; the flowers subsessile and unilateral along the somewhat circinate divisions, and solitary in the forks. Bracts minute, subulate, one to each flower. Capsule exactly mitre-shaped; the lobes somewhat flattened anteriorly and posteriorly, slightly pointed, diverging, and then often somewhat convergent near the summit, each opening by a small chink in the ventral suture near the summit.

2. *M. sessilifolia:* leaves firm or slightly coriaceous, ovate or roundish, sessile; the veins conspicuous beneath.—Ophiorhiza Mitreola, *Michx.! fl.* 1. *p.* 148 (partly); *Pursh, fl.* 1. *p.* 139; *Ell.! sk.* 1. *p.* 237. O. ovalifolia, *Muhl. cat. p.* 20. O. Croomii, *Curtis! pl. Wilmingt. in Bost. jour. nat. hist.* 1. *p.* 128. Anonymos sessilifolia, *Walt.! Car. p.* 108. Cynoctonum sessilifolium, *Gmel. l. c.*

β. angustifolia: leaves lanceolate-elliptical, closely sessile, obscurely veined.

Damp shady soil, and wet banks of rivers, South Carolina! Georgia! and Alabama! *β.* Middle Florida, *Dr. Chapman!* June–Aug.—Stem 12–18 inches high, somewhat quadrangular, simple, or sometimes branched from the base, or slightly so at the summit. Leaves half an inch to an inch long, often nearly round, very obtuse at the base, and closely sessile. Stipules very small, those of the lower leaves indistinct. Peduncles and inflorescence, flowers, &c. nearly as in the preceding species, the flowers perhaps closer and more nearly sessile. Æstivation of the corolla slightly imbricated?—We have resumed the specific names of Walter, the first botanist who distinguished the two species. It is Achille Richard, if we mistake not (for we do not possess his paper on the subject), who has proposed the name of M. ophiorhizoides; but, as he has followed Michaux, who considered the two plants as mere varieties, we know not to which species this name, if adopted, should be applied; perhaps to M. sessilifolia, which appears to be the plant Michaux had chiefly in view, while the other species is the original Ophiorhiza Mitreola.

19.? POLYPREMUM. *Linn., in act. Ups.* (1741) *t.* 78; *Lam. ill. t.* 71; *Gærtn. fr. t.* 62; *Juss. in ann. mus. Par.* 5. *p.* 255, *& mem. mus.* 6. *p.* 382; *DC. prodr.* 4. *p.* 435.

Symphoranthos, *Mitch.*

Calyx deeply 4-parted; the divisions subulate from an ovate base, with scarious margins. Corolla somewhat rotate, not longer than the calyx; the throat bearded; the lobes of the 4-parted limb slightly unequal, oval. Stamens 4, inserted into the tube of the corolla towards the base, included: anthers subglobose. Ovary coherent merely with the base of the calyx, 2-celled: style extremely short: stigma ovoid (large), entire. Capsule ovoid, shorter than the persistent calyx, slightly compressed and didymous, 2-celled, 2-valved, loculicidal: placentæ oblong, ascending from near the base of the dissepiment, many-seeded. Seeds minute, angled, diaphanous. "Embryo straight, in the axis of fleshy albumen." *Gærtn.*—A glabrous dichotomously much branched and diffuse annual herb, rather rigid; with opposite subulate-linear leaves, connected on each side by an obscure stipular membrane. Flowers small and inconspicuous, solitary and sessile in each fork of the branches, and terminal, subtended by one or two pairs of subulate bracts. Corolla white.

P. procumbens (Linn. l. c.)—*Pursh, fl.* 1. *p.* 99; *Ell. sk.* 1. *p.* 200; *DC.! l. c.* P. Linnæi, *Michx.! fl.* 1. *p.* 83.

Dry fields and pastures, Virginia! to Florida! Key West! and Louisiana! May–Sept.—Stems numerous, procumbent or somewhat erect, 6–12 inches long; the angles minutely scabrous. Leaves about an inch long, very minutely serrulate-scabrous on the margins, often fascicled in the axils. Bracts similar to the upper leaves. Sepals with a green and rigid midrib and subulate point, the border broad and scarious. Throat of the corolla densely bearded: the 2 upper? lobes slightly shorter, and perhaps a little divergent from the lower. Stamens equal. Capsule between crustaceous and coriaceous; the placentæ oblong, nearly the length of the cells, covered throughout with the very numerous seeds.

ORDER LXXIV. VALERIANACEÆ. *DC.*

Tube of the calyx adherent to the ovary; the limb various, sometimes forming a plumose pappus, occasionally obsolete. Corolla tubular-infundibuliform or obconical, often gibbous anteriorly or spurred; the limb mostly 5-lobed, imbricate in æstivation. Stamens distinct, inserted into the corolla, sometimes 5, more frequently 3 or 4 (the posterior only, or this and one of the lateral ones being suppressed), rarely 2 or reduced to a single one (the posterior): anthers introrse. Ovary mostly 3-celled, two of the cells empty, the third containing a solitary suspended ovule: style filiform: stigmas 2–3, or united into one. Fruit membranaceous or coriaceous, indehiscent, 1-celled, or frequently 3-celled with 2 of the cells empty, sometimes 2-celled by the confluence of the empty cells, 1-seeded. Seed anatropous, with a membranaceous testa, destitute of albumen.—Herbs or sometimes shrubs; the perennial species with thick and odorous roots or rhizomas. Leaves opposite, exstipulate, simple or divided. Flowers in dichotomous cymes, at first often glomerate, frequently corymbose or paniculate. Corolla white, rose-color, or blue, rarely purple or yellow.

1. VALERIANA. *Tourn.; Linn.* (excl. spec.); *Neck. elem.* 1. *p.* 122; *DC. mem. Valer., & prodr.* 4. *p.* 632.

Limb of the calyx involute after flowering, at length evolute, forming a plumose pappus of numerous setæ, deciduous. Corolla obconical, or with a cylindraceous tube, sometimes gibbous, but not spurred at the base; the limb obtusely 5- (rarely 3–4-) cleft, regular. Stamens 3. Fruit 1-celled when mature (with no vestiges of the abortive cells), 1-seeded. Perennial herbs or sometimes shrubby plants, with divided or undivided leaves. Flowers cymose, the dichotomal flowers sessile; the cymules often paniculate or glomerate. Bracts usually opposite. Corolla white, sometimes bluish or rose-color.

Our species are all true Valerians (§ Phu, *DC.*), and are perennial herbs.

* *Stems climbing or twining.*

1. *V. scandens* (Linn.): herbaceous, glabrous, climbing and twining; leaves on slender petioles, ternately divided; the divisions ovate or oblong-ovate, entire, the terminal one largest, mostly acuminate; flowers (small) in dichotomous diffuse or divaricate paniculate cymes, axillary and terminating the branches; corolla very short; fruit glabrous or slightly hairy, 3-nerved on one side, 1-nerved on the other.—*Linn. spec.* (*ed.* 2) 1. *p.* 47; *Willd. spec.* 1. *p.* 180; *DC.! prodr.* 4. *p.* 634.

Florida, *Baldwin! Dr. Leavenworth!*—Stem slender, branching, climbing to the height of 4 or 5 feet. Leaves membranaceous.

* * *Stem erect: root or rhizoma somewhat creeping, fibrillose.*

2. *V. sylvatica* (Herb. Banks.): glabrous; stem slightly striate, simple; radical leaves ovate or oblong-spatulate, entire, or rarely with 2 small auriculate lobes, on slender petioles; cauline ones pinnately divided; the divisions lanceolate or ovate-lanceolate, entire or obscurely serrate, the terminal one larger; flowers all perfect and similar, numerous, in a compact cyme; lobes of the stigma 2–3, minute; fruit ovoid, compressed, glabrous.—*Richards.! in appx. Frankl. journ. ed.* 2. *p.* 2; *Hook.! fl. Bor.-Am.* 1. *p.* 291. V. dioica, *Pursh, fl.* 2. *p.* 727.

β. uliginosa: leaves ciliate; the surface also (as well as the stem) often minutely pubescent; the terminal division frequently toothed.—V. sylvatica? *Beck! bot. p.* 164.

Newfoundland, *Banks!* On Clear-water River, in Subarctic America, *Richardson!* Prairies of the Rocky Mountains, (in about lat. 52° ?) *Drummond! β.* In swamps, Fairhaven, Vermont, *Dr. Robbins! Beck! Prof. Tully!* Wayne County, New York, *Dr. Sartwell!* Near Pontiac, Michigan, *Mr. George P. Williams!* June–July.—Root having the odor of V. officinalis. Plant 10–24 inches high. Divisions of the cauline leaves 5–11, varying from oblong-ovate to linear-lanceolate, mostly acute. Corolla short, obconical, gibbous at the base, rose-color.—The flowers of the northern plant (var. *α.*) are no larger than those of V. dioica of Europe (to which Hooker thinks the species is probably too nearly allied); but the plant from the United States, besides the differences already indicated, has rather larger flowers: the cyme, at first glomerate, is at length open and somewhat paniculate. The fruit of the northern plant is unknown to us; in that of the United States it is glabrous, narrowly oblong-ovate, 3-nerved on one side, and 1-nerved on the other. The leaves in the specimens communicated by Mr. Williams are pubescent throughout.

3. *V. pauciflora* (Michx.): glabrous; stem simple, slender, often decumbent at the base and surculose; radical leaves on slender petioles, ovate, cordate, acuminate, crenate-toothed, sometimes ternately divided, with the lateral divisions small; cauline leaves pinnately 3–7-divided; the divisions ovate or oblong-ovate, often petiolulate, acute or acuminate, mostly serrate; cymules few-flowered, paniculate; tube of the corolla long and slender, with a minute gibbosity at the base; fruit elliptical, flat, minutely pubescent along the middle, marked on one side with 3 closely approximate, on the other with 3 distant nerves.—*Michx.! fl.* 1. *p.* 18; *Nutt.! gen.* 1. *p.* 20; *DC. prodr.* 4. *p.* 638.

Along the Alleghany Mountains, from Virginia! to Tennessee! and in the Western States! June–July.—Stem 1–3 feet high. Leaves thin and membranaceous. Corolla pale pink, 8 lines to near an inch in length.

4. *V. capitata* (Willd.): glabrous, or pubescent at the nodes of the erect simple stem; radical and lower cauline leaves on slender petioles, either simple (and ovate or broadly oval, obtuse), or pinnately 3–5-divided; the divisions broadly oval, sinuate-toothed, repand-crenulate, or often entire, the terminal one largest; the upper cauline leaves somewhat sessile, undivided or often ternately parted; the divisions (or leaves) oblong or ovate-oblong, mostly acute, serrate-toothed or entire; cyme glomerate or often capitate; bracts filiform-linear, elongated; corolla gibbous on one side, at first short; the tube at length elongated; fruit ovate-oblong, compressed, very glabrous, 2–3-nerved on one side, 1-nerved on the other.—" *Willd. herb.*; *Ræm. & Schult. mant.* 1. *p.* 257 (under V. sisymbriifolia, by a typographical error)"; *Cham. & Schlecht. in Linnæa*, 3. *p.* 130; *DC. prodr.* 4. *p.* 637; *Hook. & Arn. bot. Beechey, p.* 125; *Hook.! fl. Bor.-Am.* 1. *p.* 292.

β. *Hookeri:* plant larger; cyme more or less expanded.—V. pauciflora, *Hook.! l. c. t.* 101, not of *Michx.* V. Hookeri, *Nutt. mss.* V. Sitchensis, *Bongard, in mem. acad. St. Petersb.* (*ser.* 6) 2. *p.* 145?

Kotzebue's Sound, *Chamisso & Eschscholtz, Lay & Collie!* (*Beechey's Voy.*) Norfolk Sound, *Eschscholtz!* Arctic coast, *Dr. Richardson!* β. Moist rocks and islands of the Oregon, *Douglas, Dr. Scouler!* Woods in the Rocky Mountains about lat. 56°, *Drummond.*—Plant 1–3 feet high. Leaves or segments one to nearly 3 inches long, membranaceous, veiny, obtuse or rather acute at each end. Peduncles slightly hairy. Corolla whitish or rose-color, at first about the length of the bracts, in size equal to those of the nearly allied V. tripteris of Europe, gibbous about to the same degree and in the same manner; but the tube at length elongates and becomes slender, and the gibbosity nearly disappears: the fully developed corolla is not more than half the length of that of V. pauciflora.—Like V. tripteris, this species varies with the leaves or divisions toothed or entire: we have never seen them cordate, nor does Hooker represent them thus. Our specimen collected by Eschscholtz, as well as one from Kotzebue's Sound gathered in Capt. Beechey's Voyage and given to us by Dr. Arnott, might as well be referred to the var. β., which we are confident is only a more luxuriant state of the northern plant. It is also a native of Kamtschatka &c. Judging from the description, we should have referred the V. Sitchensis, *Bongard*, without hesitation, to our var. β.; but it is said to differ from V. capitata, 'as well in the form of the leaves as in its whole habit.' The root of the Sitcha plant is also said to have a stronger odor than that of V. officinalis, and to be employed medicinally by the natives of the island.

* * * *Stem erect: root fusiform, fleshy: leaves somewhat fleshy.*

5. *V. edulis* (Nutt. mss.): stem very glabrous; leaves all somewhat fleshy, pubescent, petioled; the radical ones linear-lanceolate, entire, or 1–2-pinnately parted, with the lobes divaricate; the cauline deeply pinnatifid,

with linear segments; panicle elongated; the peduncles ternately verticillate; flowers white (*Hook.*); "fruit ovate, compressed, pubescent; the limb of the calyx at length evolved in a plumose crown of about 15 setæ." *Nutt.*—Patrinia ceratophylla, *Hook. fl. Bor.-Am.* 1. *p.* 290.

Interior of Oregon from Wallawallah and Kettle Falls, to the vallies of the Rocky Mountains, *Douglas*, *Nuttall.*—"Stem about a foot, or in the plains of the Rocky Mountains only 3–4 inches high. Flowers small, white, in paniculated clusters. Leaves thin and membranaceous. Fruit one-celled." *Nutt.*—This is one of the numerous plants, the roots of which furnish food to the aborigines of the country. The thick and fusiform black root, although bitter and apparently pernicious, when baked on heated stones or steamed under ground is converted into a pulpy mass, sweet and rather agreeable to the taste, and not unwholesome. *Dougl.*, *Nutt.*—The following is evidently an allied species.

6. *V. ciliata:* stem very glabrous, striate, simple; leaves somewhat fleshy, glabrous, densely ciliate; the radical ones entire, spatulate-lanceolate, tapering into a slender sheathing base; some of them often pinnately 5–7-parted, with the segments linear or lanceolate; the cauline few (1–2 pairs), sessile, pinnately 3–9-parted; the segments linear; flowers in an elongated compound panicle; corolla very short, obconical-campanulate (greenish-white); fruit ovate, compressed, 3-ribbed on one side, 1-ribbed on the other; limb of the calyx at length evolved in a plumose crown of about 12 elongated setæ.—V. n. sp., *Sullivant! cat. Ohio plants.* Patrinia longifolia, *MacNab, in Edinb. phil. jour.* 19. *p* . . ?

Swamps and wet alluvial prairies, "near Springfield, Ohio, *Mr. Williams*," *Mr. Sullivant!* Urbana, Ohio, *Mr. Samples!* Milwaukie County, Wisconsin, *Mr. Lapham!* On the Maitland River, near Goderich, Upper Canada, *Mr. J. Macnab* (1834). June.—Root fusiform, often 6 to 12 inches long, resembling that of the carrot in color and appearance, except that it is inclined to become horizontal and branched below, bitter and somewhat aromatic to the taste, mucilaginous. (*Mr. Samples*, *Mr. Sullivant.*) Stem 1–3 or even 4 feet high in fruit, sometimes leafless. Leaves dark green; the radical ones 4 to 9 inches long, clustered; the veins somewhat parallel, but reticulated. Panicle at length elongated to a foot or more; the primary branches rather remote, elongated; the flowers, as usual in the genus, at first glomerate, but loose in fruit.—The Patrinia longifolia of MacNab was doubtless founded upon a small and immature specimen of this interesting plant. That specific name is pre-occupied in Valeriana.

‡ *Doubtful Species.*

7. *V.* (Phyllactis) *obovata* (Nutt.): stemless; root fusiform; leaves radiating, linear-spatulate, obtuse, hirsute-pilose. *Nutt. gen.* 1. *p.* 21 (under Phyllactis); *Schult. mant.* 1. *p.* 214; *DC. prodr.* 4. *p.* 632.

Bare hills around the Arikaree village, Upper Missouri.—The expanded flowers, fruit &c., unknown. *Nuttall.*—A very doubtful plant.

2. PLECTRITIS. *Lindl. bot. reg. t.* 109~~5~~4 (§ of Valerianella); *DC. mem. Valer. & prodr.* 4. *p.* 631.

Limb of the calyx truncate, entire, almost none. Tube of the corolla gibbous anteriorly, spurred at the base; the limb 5-cleft, more or less bilabiate. Stamens 3. Stigma capitate. Fruit with a somewhat coriaceous triangular fertile cell; the two empty ones open from top to bottom! each forming an involute wing.—Annual glabrous herbs (natives of Oregon and California), with the habit of Fedia; the stem simple or sparingly branched. Leaves entire, oblong or obovate-spatulate, sessile. Flowers rose-color, aggregated in verticillate glomerules, or capitate. Bracts subulate, verticillate and involucellate, united at the base.

The flowers are, we believe, all perfect and similar; not monœcious, as stated by De Candolle: the bracts are not multifid, but crowded and verticillate.

1. *P. congesta* (DC.): corolla manifestly bilabiate; the spur (or rather its free portion) small, much shorter than the tube; flowers in an oval or oblong head, or often in verticillate (approximate or rather distant) glomerules.—*DC.! l. c.; Hook.! fl. Bor.-Am.* 1. *p.* 291. P. congesta & P. capitata, *Nutt. mss.* Valerianella congesta, *Lindl.! bot. reg. t.* 1095. V. parviflora, *Dougl. ined.* (var. with smaller flowers and narrower leaves, *Hook.*)

Banks of streams and moist rocks, along the Oregon, from the sea-shore to the Wahlamet, *Douglas! Dr. Scouler! Nuttall, Mr. Tolmie!* May–June. —Plant from 4 inches to 2 feet high. Corolla usually 3 or 4 lines long. Ovary pubescent with short thick hairs, but mostly glabrous when mature, except along the face where it is shielded by the incurved wings.

2. *P. macrocera:* limb of the corolla almost regular, small; the spur (or rather its free portion) thick, longer than the tube; stem slender; flowers capitate.—P. congesta β. *Hook. & Arn.! bot. Beechey, suppl. p.* 349, excl. syn.

California, *Douglas!*—Upper leaves sometimes denticulate. Heads, and especially the flowers, smaller than in the preceding; the lobes of the corolla much shorter. Ovary and fruit nearly or quite glabrous.—In P. congesta, the gibbous portion of the corolla, which we should prefer to call an adnate spur, is coherent with the proper (very slender) tube quite to the base of the latter, whence it is produced into a rather slender, but short horn. In the Californian species, on the contrary, the spur is free from at least the lower half of the filiform tube; but is nearly similar in form, except that the termination is more obtuse.

3. FEDIA. *Mœnch; Gærtn. fr. t.* 86 (excl. spec.); *J. Woods, in Linn. trans.* 17. *p.* 421, *t.* 21.

Fedia & Valerianella, *Mœnch, DC. &c.*

Limb of the calyx toothed and persistent, or obsolete. Tube of the corolla (sometimes gibbous) not spurred; the limb 5-lobed, regular, or slightly irregular. Stamens 2 or 3. Stigma entire, or 2–3-lobed. Fruit 3-celled; two of the cells empty (sometimes confluent into one), the other 1-seeded.—Annual nearly glabrous herbs, more or less dichotomous above. Leaves oblong or linear, sessile, entire, or often toothed or incised near the base. Flowers in glomerate or crowded cymules, white, rose-color, or purple. Bracts opposite, or somewhat involucellate.—*Corn-Salad.*

Our first section is almost exactly intermediate between Fedia and Valerianella of Mœnch and De Candolle; having the corolla of the former, with the fruit, stamens, and stigmas of the latter.

§ 1. *Tube of the corolla long and slender; the limb slightly irregular: stamens 3: stigma 3-cleft: fruit flattened fore and aft, with a somewhat crescent-shaped transverse section; the empty cells membranaceous, inflated, separated and diverging, larger than the fertile cell.*—SIPHONELLA.

1. *F. longiflora:* tube of the corolla filiform, many times longer than the limb or the ovary; fruit with a nearly orbicular outline, nearly glabrous, minutely 3-toothed at the summit; the teeth which crown the empty cells obscure and incurved; flowers in glomerate cymules; bracts lanceolate, glandularly fimbriate-serrulate; lower leaves oblong-spatulate; the upper linear-oblong, entire.—Plectritis longiflora, *Nutt.! mss.*

Plains of Arkansas, *Nuttall!*—Plant glabrous, 6–12 inches high; the stem several times dichotomous above. Leaves about an inch long. Corolla about half an inch long; the (purplish) filiform tube not at all gibbous, abruptly dilated at the summit into a very small slightly ringent (white) limb. Stamens and style exserted. Empty cells of the fruit separate from top to bottom, almost lateral, much larger than the somewhat cartilaginous fertile cell.

2. *F. Nuttallii:* tube of the corolla slender, twice or thrice the length of the limb, furnished with a small callous gibbosity above the middle; fruit with a nearly orbicular outline, very glabrous, minutely 3-toothed at the summit; flowers in capitate cymules; bracts ovate-lanceolate, glandularly serrulate; leaves entire, short, obovate-spatulate; the uppermost oblong.—Plectritis spathulata, *Nutt.! mss.*

Plains of Arkansas, with the preceding, (which it resembles,) *Nuttall!*—Tube of the (white) corolla shorter, and the limb larger in proportion. Fruit very similar to the preceding, immature in the specimen, flattened, concavo-convex or lunulate.

§ 2. *Corolla with a short tube and a regular limb: stamens 3: stigma 3-cleft or entire: empty cells of the fruit membranaceous and inflated, or sometimes nerviform.*—VALERIANELLA, Mœnch, DC.

* *Fruit with a gibbous corky or spongy mass at the back of the fertile cell; the empty cells large, sometimes confluent.*—Locustæ, *DC.*

3. *F. olitoria* (Vahl.): fruit compressed, oblique, at length broader than long, glabrous; the calyx teeth obscure or none; the partition between the empty cells often imperfect; radical leaves petioled; flowers pale blue.—*Vahl, enum.* 1. *p.* 19; *J. Woods, in Linn. trans.* 17. *p.* 430, *t.* 24, *f.* 1. (*fr.*) F. cærulea, *Aikin! in Eaton, man. bot.*, under Valerianella. F. radiata, *Bart. compend.?* Valeriana locusta *a.* olitoria, *Linn.* V. olitoria, *Willd. spec.* 1. *p.* 182. Valerianella olitoria, *Mœnch, meth. p.* 493; "*Dufresne, Valer. p.* 56, *t.* 3, *f.* 8"; *DC. prodr.* 4. *p.* 625. V. radiata, *DC. l. c.; Darlingt. fl. Cest. p.* 11 (chiefly); not Fedia radiata, *Michx.* V. rhombicarpa, *Aikin! cat. Baltimore plants.*

Fields, Maryland and Virginia, *Dr. Aikin!* New Orleans, *Drummond.* Doubtless introduced from Europe. June.—Plant 4–10 inches high, dichotomous; the angles of the stem pubescent. Upper leaves sparingly toothed at the base, ciliate, as also the bracts. Flowers smaller than in V. radiata, in small glomerules. Stigma of three very small linear-oblong lobes. Transverse section of the fruit elliptical; the spongy mass often nearly as large as the empty cells.

* * *Fruit triquetrous, not grooved between the (at length confluent?) empty cells, which form the anterior angle, and are much smaller than the fertile one; the latter not thickened at the back.*—Trigonocœlæ.

4. *F. Fagopyrum:* fruit triangular, with an ovate outline, nearly glabrous when mature, obsoletely 2–3-toothed at the apex; the lateral angles acute, the anterior somewhat obtuse; upper leaves mostly entire and rather acute;

flowers white.—F. radiata, *Torr.! fl.* 1. *p.* 35, chiefly, not of *Michx.* Valerianella radiata, *Beck, bot. p.* 164, partly.

Swampy shady grounds, Western part of the State of New York! to Michigan! and apparently in Ohio and Kentucky. May.—Stem 6–18 inches high, dichotomous above, nearly glabrous. Leaves an inch or an inch and a half long, slightly glaucous; the lowermost spatulate; the uppermost lanceolate-oblong, frequently but not uniformly acutish. Bracts lanceolate, acute, with slightly scarious scarcely ciliate margins. Corolla larger than in F. radiata, infundibuliform. Stigma thickened, nearly entire. Fruit much larger than in F. radiata, 1½ to 2 lines long, minutely puberulent when young, but glabrous when mature, in shape resembling a grain of buckwheat, acutish, minutely and obtusely 1–3-toothed; the fertile cell more than twice the breadth of the two sterile ones taken together, broad and flat on the back, the transverse section triangular with the anterior angle truncated and excavated for the reception of the sterile cells, filled by the broad seed: the empty cells taken together roundish, membranaceous, with the anterior groove very minute or none; the dissepiment thin, and apparently often disappearing.—A remarkable species in its fruit, which furnishes the chief characters in this genus. We have specimens from Ohio and Kentucky, unfortunately without fruit, which have just the flowers of this plant, but rather larger leaves, all obtuse, inclined to be ciliate, and the upper often toothed at the base: they will doubtless prove to belong to this species.

* * * *Fruit not thickened or corky at the back of the fertile cell; the transverse section somewhat orbicular or crescent-shaped: empty cells as large as or larger than the fertile one, either contiguous or separated.*—Platycœlæ & Selenocœlæ, *DC.*

5. *F. radiata* (Michx.): fruit ovoid, pubescent, obtusely and unequally somewhat 4-angled, slightly 1-toothed at the summit; the empty cells contiguous, but with a rather deep groove between them, rather narrower than the flattish fertile cell; upper leaves often toothed; flowers white.—*Michx.! fl.* 1. *p.* 18; *Vahl. enum.* 2. *p.* 21; *Ell. sk.* 1. *p.* 42. Valeriana locusta ε. radiata, *Linn. spec.* 1. *p.* 34? V. locusta, *Walt. Car. p.* 66. V. radiata, *Willd. l. c.?* Valerianella radiata, *Dufresne, l. c.?* (ex syn.), not of *DC.*

β.? leiocarpa: fruit ovoid-oblong, glabrous, the fertile cell rather narrower in proportion.

Low grounds and moist fields, Michigan, *Dr. Pitcher!* to Florida! and Western Lousiana! *β.* North Carolina!—April– (March in the Southern States) May.—Stem 3–12 inches high, often slightly pubescent. Leaves mostly somewhat ciliate; the lower oblong-spatulate; the upper lanceolate-oblong, obtuse, often coarsely toothed towards the base. Bracts lanceolate, slightly ciliate. Flowers in dense cymules, much smaller than in the preceding, white, or bluish-white? Stigma with three short lobes. Fruit scarcely a line long, clothed with a short somewhat deciduous pubescence, slightly grooved on each side between the sterile and the fertile cell, and with a pretty deep open groove between the two former, which however are not at all divergent.—This species is without doubt indigenous; and indeed is quite different from any described foreign species, but it has sometimes been confounded with the introduced F. olitoria. We are uncertain to which the synonym of Clayton should be referred: the character 'floribus albis' applies best to F. radiata; that of 'semine compresso' to F. olitoria.—Our var.? leiocarpa has a narrower as well as smooth fruit, but we dare not consider it a distinct species.

6. *F. Woodsiana:* fruit subglobose-inflated, glabrous, very slightly 1-toothed at the summit; the empty cells separate from top to bottom, diverging, much inflated, their transverse section nearly orbicular, much larger than the fertile cell, which is narrowly oblong and flattened on the back;

upper leaves usually incisely toothed; bracts oval-lanceolate, acute, not ciliate.

Texas, "between Bejar and Austin, *Berlandier*," *DC.* (under Valerianella pumila), *Drummond!*—Habit of F. radiata. Leaves very slightly if at all ciliate. Flowers in small glomerate cymules. Bracts without scarious margins. Corolla very small and short. Stigma with 3 short lobes. Cells of the fruit each very obscurely 1-nerved, and obtuse at the apex; the point of the fertile one slightly produced, but not appearing like a tooth of the calyx.—This apparently very distinct species (allied doubtless to F. pumila, and perhaps also to F. turgida,) we would dedicate to Joseph Woods, Esq. F. L. S., a well-known British botanist, whose admirable memoir entitled "*Observations on the species of Fedia*" (published in the seventeenth volume of the Transactions of the Linnæan Society), has thrown much light upon the European species.

‡ *Doubtful Species.*

7. *F. chenopodifolia* (Pursh): dichotomous; leaves ovate, acute, toothed towards the base; cymes naked, divaricate-dichotomous; filaments long. *Pursh, fl.* 2. *p.* 727.

Virginia, *Herb. Sherard.* ① About a span high; flowers the size of Valeriana officinalis. *Pursh.*

ORDER LXXV. DIPSACEÆ. *Vaill.; DC.*

Tube of the calyx adherent to the ovary, or sometimes free except at the summit; the limb various, sometimes forming a hairy or plumose pappus. Corolla tubular; the limb 5-cleft, or 4-cleft by the union of the two superior lobes; the inferior lobe larger and overlapping the others in æstivation. Stamens 4, inserted into the corolla towards its base (the posterior one suppressed), distinct, or rarely with the filaments united in pairs: anthers introrse: pollen tetrahædal. Ovary 1-celled, with a single suspended ovule: style filiform: stigma simple or 2-lobed. Fruit membranaceous or acheniform, indehiscent, crowned with the limb of the calyx, 1-celled, 1-seeded. Seed anatropous, with a very thin testa which often coheres with the pericarp. Embryo nearly the length of the fleshy albumen.—Herbs or suffrutescent plants (none of them natives of America); with opposite or verticillate sessile leaves, without stipules. Flowers aggregated in a dense involucrate head upon a common receptacle (rarely in dense whorls), each usually subtended by a chaff-like bract, and surrounded at the base by a very short closely appressed monophyllous involucel; the corolla of the exterior flowers often radiant.

1. DIPSACUS. *Tourn.; Linn.; Gærtn. fr. t.* 86; *Coult. Dips. p.* 21, *f.* 2–4, *& in DC. prodr.* 4. *p.* 695.

Flowers capitate; the involucre polyphyllous, longer than the somewhat foliaceous and acuminate chaff of the receptacle. Involucel 4-sided, closely investing the ovary and fruit. Tube of the calyx coherent with the ovary; the limb cup-shaped or discoid. Limb of the corolla 4-cleft. Stamens 4. Stigma longitudinal.—Biennial erect stout herbs (natives of Europe and Middle Asia), hairy or prickly. Leaves opposite, often connate at the base, undivided or laciniate. Heads large, oblong or roundish; the expansion of the flowers commencing about the middle and proceeding in opposite directions! Corolla pale purple, yellowish, or whitish.

1. *D. sylvestris* (Mill.): stem, with the midrib of the leaves and involucre, prickly, angled; leaves lanceolate-oblong, crenate-toothed; the uppermost lanceolate, mostly entire; leaves of the involucre long and slender, pungent, curved upwards, longer than the oblong head; chaff of the receptacle tapering into a long setaceous flexible awn-like appendage, with a straight point.—*Mill. dict. no.* 2; *Jacq. fl. Austr. t.* 402; *Fl. Dan. t.* 965; *Engl. bot. t.* 1032; *Pursh, fl.* 1. *p.* 96; *Torr.! fl.* 1. *p.* 164; *Darlingt.! fl. Cest. p.* 98.

Fields and road-sides, not uncommon in the Northern and Middle States; naturalized. July–Aug.—Corolla pale purple, pubescent.—*Wild Teasel.*

D. Fullonum, the *Fuller's Teasel*, is sometimes cultivated, but it has never become naturalized in this country.

Order LXXVI. COMPOSITÆ. *Vaill.; Linn.; Adans.*

Synantheræ, *Rich.*—Syngenesia, *Linn. sex. syst.*—Compositifloræ, *Gærtn.*

Flowers collected into a dense head (compound flower of the older authors) upon a common receptacle, surrounded by an involucre. Tube of the calyx coherent with the ovary and undistinguishable from it; the limb (called *pappus*) composed of bristles or scales, &c., or very rarely foliaceous, often wanting or reduced to a margin. Corolla composed of mostly 5 united petals; either ligulate or tubular, in the latter case with a valvate æstivation; the tube generally furnished with 5 nerves (or more properly 10 united in pairs), which extend from the base to the sinuses, where they divide, a branch coursing along or near each margin to the apex of the lobes. Stamens as many as the lobes of the corolla and alternate with them: the filaments (distinct or united above) inserted into the tube: anthers linear, coherent by their margins into a cylinder (*syngenesious*). Ovary 1-celled, containing a single erect anatropous ovule: style (usually undivided in the sterile flowers) 2-cleft; the lobes or branches (incorrectly called stigmas) various in form, mostly flattish within, often furnished with collecting hairs; the proper stigmas occupying their inner margins, in the form of glandular slightly prominent lines. Fruit an indehiscent dry 1-seeded pericarp (*achenium*), crowned with

the limb of the calyx or pappus. Seed destitute of albumen. Radicle short: cotyledons flat or plano-convex.—Herbs, rarely shrubs or trees (forming about one-tenth of phanerogamous vegetation); with alternate or opposite sometimes divided or lobed exstipulate leaves. Branches often corymbose, terminated by the heads, the central ones earliest developed. Flowers in each head expanding successively from the margin (or lower portion) to the centre or apex, either all of the same color (*homochromous*), or the marginal ones different from those of the disk (*heterochromous*), the latter in this case almost always yellow; either perfect, polygamous, or diclinous.

There are several terms nearly peculiar to this order, or employed in a particular sense. The head has been termed by different authors the *Calathidium*, *Anthodium*, or *Cephalanthium;* the involucre has received the name of *Common calyx*, *Periclinium*, *&c.;* and the receptacle has been called the *Phoranthium*, *Clinanthium*, or *Rachis:* we have employed none of these terms. The head is said to be *homogamous*, when all the flowers are perfect; or *heterogamous*, when the marginal ones are pistillate or neutral, and the others perfect or staminate: it is termed *discoid*, when the corolla is tubular throughout; *ligulate*, when all the corollas are ligulate; *radiate*, when the marginal ones only are ligulate and the others tubular; and *falsely discoid*, when the corollas are all bilabiate: they are *monœcious*, when the staminate and pistillate flowers occupy the same heads; *heterocephalous*, when they occupy different heads upon the same individual; *diœcious*, when in separate heads upon different individuals. The modified leaves of the involucre are called *scales*. The receptacle, which is the axis of a contracted or depressed spike (and therefore very properly termed *rachis*, by Lessing), is said to be *paleaceous* or *chaffy*, when all the flowers are subtended by chaffy scales (*bracteoles*, Lessing), similar to the innermost scales of the involucre; *semipaleaceous*, when only partly furnished with chaffy scales, and *epaleaceous* or *naked*, when destitute of these scales: it is *alveolate*, when each flower is surrounded at the base with a very short scaly ring or involucel, so as to present an appearance like honey-comb when the achenia are removed; *fimbrillate*, when the margins of the alveoli are irregularly lacerate or bristly; *areolate* when a slight or obsolete, often pentagonal, border or line surrounds the base of each flower. The anthers are usually more or less prolonged at the summit into a membranous appendage (*appendiculate*); and sometimes each lobe or cell bears a subulate or setiform appendage at the base, when they are said to be *caudate*. The achenia are articulated with the receptacle, either sessile or stipitate: they are sometimes *rostrate*, or with the summit prolonged into a beak; in which case the pappus is often, but incorrectly, said to be stipitate.—For the sake of greater convenience in the study of this vast family, we introduce a synopsis of its leading divisions; and give, at the commencement of each tribe, a conspectus of its subdivisions and genera, so far as they are represented in the flora of North America. This is the more necessary, since the student may at first meet with some difficulty in the application of the leading technical characters of the tribes, derived from the form of the styles and stigmas.

CONSPECTUS OF THE TRIBES.

Suborder I. TUBULIFLORÆ.—Corolla of the perfect flowers tubular, and regularly 5- (rarely 3–4-) toothed or lobed.

Tribe I. Vernoniaceæ. Style of the perfect flowers cylindraceous; the branches usually elongated and subulate, hispid throughout; the stigmatic lines not extending beyond their middle.

p. 63. Tribe II. Eupatoriaceæ. Style of the perfect flowers cylindraceous; the branches elongated, obtuse or clavate, externally puberulent or papillose towards the summit; the stigmatic lines obscure, terminating near their middle.

Tribe III. Asteroideæ. Style of the perfect flowers cylindraceous; the branches linear, externally flattish, and minutely and equally pubescent above; the stigmatic lines prominent, extending about to the origin of the exterior pubescence.

264 Tribe IV. Senecionideæ. Style of the perfect flowers cylindraceous; the branches linear, truncate at the summit and penicillate, or often produced into a conical or elongated hispid appendage; the stigmatic lines rather broad and prominent, extending to the commencement of the appendage or hairy portion.

152 Tribe V. Cynareæ. Style of the perfect flowers nodose-thickened and often penicillate at the summit; the stigmatic lines not prominent, reaching to and confluent at the summit of the externally puberulent branches.

Suborder II. LABIATIFLORÆ.—Corolla of the perfect flowers bilabiate.

Tribe VI. Mutisiaceæ. Style of the perfect flowers cylindraceous or somewhat nodose above; the branches obtuse or truncate, externally very convex and minutely pubescent above.

Tribe VII. Nassauviaceæ. Style of the perfect flowers not nodose-thickened above; the branches linear, rather long, truncate, penicillate at the summit.

Suborder III. LIGULIFLORÆ.—Flowers all perfect and ligulate.

Tribe VIII. Cichoraceæ. Style cylindraceous above; the branches rather long and obtuse, equally pubescent; the stigmatic lines terminating below their middle.—Plants with milky juice.

Suborder I. TUBULIFLORÆ. *DC.*

Corolla of the perfect flowers tubular, and regularly 5- (rarely 4-) toothed or lobed. Pollen globose, echinulate, or (in Cynareæ) rarely smooth and elliptical.

Tribe I. VERNONIACEÆ. *Less.*

Heads discoid, with the flowers all tubular and perfect (homogamous), or rarely radiate; the ray flowers ligulate and pistillate. Corolla occasionally palmate or obscurely bilabiate. Style cylindrical above; the branches subulate and elongated (rarely short and obtuse), equally hispid; the stigmatic lines terminating below or near their middle, not confluent.

CONSPECTUS OF THE GENERA.

Subtribe 1. Vernoniæ.—Heads discoid, homogamous.

1. Vernonia. Heads several-many-flowered. Pappus of hair-like bristles.
2. Stokesia. Heads many-flowered. Pappus of 4–5 long bristly deciduous scales.
3. Elephantopus. Heads 3–5-flowered, aggregated in glomerules. Pappus of several persistent chaffy bristles or awns.

Subtribe 2. Pectideæ.—Heads radiate, heterogamous.

4. Xanthisma. Corolla of the disk regular. Leaves glandless.
5. Pectidopsis. Corolla regular. Leaves punctate. Pappus coroniform.
6. Pectis. Corolla of the disk obscurely bilabiate. Leaves punctate with glands. Pappus chaffy and mostly awned.

Subtribe 1. **VERNONIEÆ**, *Cass.*—Heads discoid; the flowers all perfect. Branches of the style elongated or acuminate.—Leaves mostly alternate. Flowers of the cyanic series, viz., white, blue, purple, or red, but never yellow.

1. VERNONIA. *Schreb. gen. p.* 541; *DC. prodr.* 5. *p.* 15.

Heads several–many-flowered; the flowers all equal and tubular. Involucre imbricate, shorter than the flowers; the inner scales longest. Receptacle commonly naked. Corolla regular; the lobes about the length of the tube. Filaments smooth. Achenia mostly striate or ribbed, with a cartilaginous callus at the base. Pappus usually double; the interior of copious capillary bristles; the exterior mostly short or minute, often somewhat squamellate or chaffy.—Mostly perennial herbs or shrubby plants (chiefly tropical), with usually alternate leaves, and various inflorescence, in the North American species corymbose-cymose. Flowers purple, rose-color, or white.

* *Cauline leaves very few: cyme dichotomous-paniculate.*

1. *V. oligophylla* (Michx.): stem slender, simple, nearly naked above; leaves scabrous, often punctate, pubescent on the veins beneath; the radical ones oval or obovate-oblong, dentate-serrate, narrowed at the base; the cauline (2–4) much smaller, lanceolate, serrulate; heads few, in a loose paniculate or dichotomous cyme, 15–30-flowered; involucre campanulate, much shorter than the mature pappus; the scales with spreading acuminate tips, lanceolate, ciliate; achenia 10-ribbed, nearly glabrous when mature.—*Michx.! fl.* 2. *p.* 94; *Nutt.! gen.* 2. *p.* 134; *Ell. sk.* 2. *p.* 286; *Less. in Linnæa*, 6. *p.* 677; *DC.! prodr.* 5. *p.* 62. Chrysocoma acaulis, *Walt. Car. p.* 196, fide *Pursh.*

Damp pine barrens, N. Carolina! to Florida! June–July.—♃ Stem 1–3 feet high, a little hairy; the root stoloniferous according to Elliott. Exterior scales of involucre loose, subulate, sometimes as long as the inner. Corolla purple.

* * *Stem leafy: cymes corymbose or somewhat umbelliform.*

2. *V. Noveboracensis* (Willd.): stem striate, slightly pubescent; leaves lanceolate or elliptical-lanceolate, sharply serrate, acute at each end, often petioled, glabrous or slightly scabrous above; cyme fastigiate; heads numerous, 20–30-flowered; involucre hemispherical-campanulate, shorter than the pappus; the scales appressed, ovate, mostly produced into a subulate or filiform flexuous appendage; several of the outermost subulate, loose and bracteolate; achenia glabrous or slightly hairy when young, glandular, shorter than the pappus.—*Willd. spec.* 3. *p.* 1632; *DC.! prodr.* 5. *p.* 63. V. præalta, *Less.! in Linnæa*, 4. *p.* 264; *Hook.! fl. Bor.-Am.* 1. *p.* 304; *Darlingt.! fl. Cest. p.* 448. Serratula Noveboracensis, &c. *Linn.! hort. Cliff. p.* 392, *& spec.* 2. *p.* 818.

β. scales of the involucre acute or acuminate, some of them usually with subulate or filiform points.—V. præalta, *Willd.! l. c.* (not of *DC.*) Serratula præalta & glauca, *Linn.! spec. l. c.*

γ. stem, cyme, and lower surface of the leaves tomentose; scales with long filiform points.—V. tomentosa, *Ell. sk.* 2. *p.* 288. Chrysocoma tomentosa, *Walt. Car. p.* 196.

Wet places nearly throughout the United States, especially near the coast and along rivers. July–Aug.—♃ Stem 3–6 feet high. Scales of the involucre brownish-purple, mostly ciliate with cobweb-like hairs. Corolla deep purple, rarely pale or pink-color.—*Iron-weed.*

3. *V. Baldwinii* (Torr.): stem and lanceolate serrulate leaves tomentose-pubescent; cyme fastigiate, somewhat crowded; heads 20–30-flowered; involucre subglobose, tomentose and glandular, shorter than the mature pappus, squarrose with the very short recurved acuminate tips of the appressed scales; achenia (immature) puberulent and glandular, shorter than the pappus.—*Torr.! in ann. lyc. New York,* 2. *p.* 211. V. sphæroidea, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 284. (ined.)

On the Missouri, *Baldwin!* Arkansas, *Nuttall!*—♃ Plant in some respects intermediate between V. Noveboracensis and V. fasciculata, but probably distinct from both; the heads mostly smaller than in the former.

4. *V. fasciculata* (Michx.): stem striate or grooved; leaves narrowly lanceolate, tapering and acute at each end, serrulate, sometimes puncticulate beneath, often somewhat petioled; cyme fastigiate; the heads numerous, approximate or crowded, 15–30-flowered; involucre hemispherical-campanulate, much shorter than the pappus; the scales all closely appressed, ciliate; the outermost much shorter, acute or mucronulate; the others obtuse, not mucronate; achenia glabrous when mature, and almost the length of the pappus.—*Michx.! fl.* 2. *p.* 94. (not of *DC.*) V. altissima, *Less. in Linnæa,* 6. *p.* 639. V. præalta, *DC.! l. c.* (chiefly, excl. syn. *Dill. Elth.?*); not of *Linn.!* Chrysocoma gigantea, *Walt.?* V. corymbosa, *Schweinitz.! in Long's 2nd exped.*

β. stem and lower surface of the leaves puberulent or almost tomentose; heads rather large; the scales of the involucre mostly very obtuse.

γ. stem and lower surface of the leaves often puberulent; heads small; scales of the involucre sometimes rather acute or mucronulate.—V. altissima, *Nutt.! gen.* 2. *p.* 134; *Ell. sk.* 2. *p.* 289.

δ. nearly glabrous; heads rather small; the scales greenish; flowers nearly white.

Prairies and moist woods, throughout the Western States! and not unfrequent, particularly var. *γ.*, in the Southern States! *β.* Illinois, *Dr. Short!* *δ.* Kentucky, *Dr. Short!* July–Aug.—♃ Stem tall (6–12 feet, *Nutt.*) and stout. Cyme usually dense and fastigiate, or sometimes loose and spreading. Flowers (except in var. *δ.*) bright purple. Pappus either pale or purple.—This species varies greatly in the size of its heads, and in the cymes: it is distinguished by its closely appressed and inappendiculate (usually rounded) involucral scales; the tips of which are mostly purple. The leaves, in one of the forms with small loosely disposed heads, are often rather broadly lanceolate, and 6 to 8 inches long.

5. *V. Jamesii:* stem nearly glabrous, striate, corymbose at the summit; leaves (upper ones) narrowly lanceolate, elongated, sessile, glabrous, 1-nerved, entire, both sides puncticulate; cyme corymbose-fastigiate; heads (about 40) 15–20-flowered, rather large; involucre oblong-campanulate or turbinate, acute at the base, shorter than the pappus; the scales all appressed, lanceolate-ovate, acuminate or somewhat mucronate, ciliate; achenia glabrous, shorter than the pappus; the exterior chaffy pappus very indistinct.—V. altissima? *β.* marginata, *Torr.! in ann. lyc. New York,* 2. *p.* 210.

On the Arkansas? *Dr. James!*—The specimen is imperfect, consisting only of a branch or the summit of a stem; but it is abundantly different from any other N. American species. The heads are half an inch in length, more elongated than usual; the scales bordered with an arachnoid web, as in many other species, and greenish, with reddish tips. The corymbose branches of the inflorescence bear 3 to 7 heads, which are mostly on slender pedicels.

6. *V. angustifolia* (Michx.): stem slender, simple or branched, hairy below; leaves numerous, sessile or nearly so, linear or narrowly lanceolate, often pubescent especially on the midrib beneath; the lower remotely serrulate; the uppermost with revolute margins, mostly entire; cyme corymbose or somewhat umbelliform, often simple; heads 15–25-flowered; involucre campanulate, shorter than the pappus; the scales ovate or lanceolate, the exterior mostly loose and bracteolate, either mucronate or furnished with subulate or filiform points; achenia minutely hispid on the ribs, much shorter than the pappus.—*Michx.! fl.* 2. *p.* 94.

α. upper leaves slender, very narrowly linear, entire, glabrous or scabrous (scales of the involucre either appendiculate or merely mucronate).—V. angustifolia, *Ell. sk.* 2. *p.* 287; *Less. l. c.*; *DC. prodr.* 5. *p.* 63. V. fasciculata, *DC.! l. c.*, not of *Michx.* Chrysocoma graminifolia, *Walt.! Car. p.* 196.

β. leaves lanceolate or linear, short, scabrous, especially above; the lower ones serrulate; scales of the involucre mostly appendiculate.—V. scaberrima, *Nutt.! gen.* 2. *p.* 134; *Ell. l. c.*; *Less. l. c.*; *DC.! l. c.*

γ. leaves lanceolate or linear-lanceolate, elongated, very scabrous above; the lower ones remotely serrulate; cymes often compound; scales of the involucre nearly inappendiculate.

Dry pine woods, N. Carolina! to Florida! (*α.* & *β.*) *γ.* Louisiana, *Dr. Hale!* Texas, *Drummond!* June–Aug.—♃ Stem 1–3 feet high. Cyme bearing 5-many (small) heads, either simple or compound, loose. Scales of the involucre few. Pappus white or purplish. Corolla bright purple. Achenia often glandular.—The lower leaves of the most narrow-leaved form are veiny, as in the other varieties; while the upper ones, being very narrow, are only one-nerved. The original specimens of both V. angustifolia, *Michx.*, and V. scaberrima, *Nutt.*, belong, if we mistake not, to precisely the same form of this species. No reliance can be placed upon the appendages of the involucral scales.

7. *V. ovalifolia*: stem simple, pubescent below, corymbose at the summit; leaves oval or lanceolate-oblong, acute, sessile, sharply serrate, veiny, nearly smooth and glabrous; cyme corymbose-fastigiate, loose; the heads about 20-flowered; involucre campanulate, much shorter than the pappus; the scales ovate, appressed, mostly acute or somewhat mucronate; achenia a little hairy, much shorter than the pappus.

Middle Florida, *Dr. Chapman!* also near Fort King, *Mr. Alden!*—Stem apparently 3–4 feet high, and rather stout, terete, finely striate above. Leaves 3–4 inches long, and 1–2 or more wide. Heads rather numerous; the involucre and flowers much resembling those of V. angustifolia, but mostly larger. Achenia glandular between the ribs: pappus purplish.

8. *V. Arkansana* (DC.): nearly glabrous; stem stout, simple, striate; leaves numerous, lanceolate-linear, acute at each end, obscurely veined, serrulate, punctate, especially above; heads 6–10, in a simple umbelliform cyme, the central one nearly sessile, subglobose, 50–60-flowered; involucre nearly as long as the pappus; the scales very numerous, lanceolate, pubescent and glandular, with spreading or squarrose subulate tips; achenia strongly 10-ribbed, puberulent and minutely glandular, nearly the length of the pappus.—*DC. prodr.* 7. *p.* 264.

Arkansas, *Nuttall! Dr. Pitcher!*—The plant of De Candolle (which was raised in the Geneva garden from seeds collected in Arkansas by Mr. Pourtales) appears to be the same with ours. But he does not mention the size of the heads, which in our plant when in fruit are nearly an inch in diameter; and then depressed-globose; and the pedicels are remarkably thickened at the summit. Corolla violet-purple. Exterior pappus short, but copious.

2. STOKESIA. *L'Her. sert. Angl. p.* 27; *DC. in ann. mus. Par.* 16. *p.* 154, *& prodr.* 5. *p.* 71; *Cass. dict.* 51. *p.* 64.

Heads many-flowered; the exterior flowers much larger and assuming the form of a ray. Involucre subglobose, bracteate at the base, imbricated in several series, appressed; the exterior scales with a somewhat spreading foliaceous ciliate-spinulose appendage; the inner oblong, somewhat ciliate. Receptacle fleshy, naked. Corolla palmate, sprinkled with resinous globules; the marginal ones much deeper cleft within. Anthers included. Branches of the style semi-subulate. Achenia short, 4-sided (rarely 3-sided), glabrous, terminated with a broad quadrangular areola. Pappus of 4–5 elongated rather rigid awn-like (white) chaffy scales, deciduous.—An erect somewhat branching perennial herb; with a tomentose stem, and large heads, resembling a Carthamus or Centaurea, terminating the branches. Leaves alternate, oblong-lanceolate, glabrous or slightly glaucous, minutely glandular-punctate, entire: the uppermost sessile and serrate-spinulose near the somewhat dilated base; the lower tapering into a margined petiole; the involucrate bracts resembling the upper leaves. Flowers blue, showy.

S. cyanea (L'Her.! l. c.)—*Ait.! Kew.* (*ed.* 2) 4. *p.* 491; *DC.! l. c.* "Carthamus lævis, *Hill, Kew.* 57. *t.* 5." C. Carolinianus, *Michx.! in herb. mus. Par.* Cartesia centauroides, *Cass. in bull. philom.* 1816, *p.* 198.

S. Carolina, "introduced into England by Mr. James Gordon about the year 1766." *Hort. Kew.* "Georgia, *Mr. Tatnall,*" *in herb. Nutt.!* Covington, Louisiana, *Drummond!*—This is one of the rarest plants of the United States. It is, or recently has been, cultivated in Mr. Buist's garden at Philadelphia. The plant collected by Drummond is inadvertently called Centaurea Americana, in the account of his United States collections, in *Comp. to bot. mag.* 1. *p.* 48.

3. ELEPHANTOPUS. *Linn.*; *Gærtn. fr. t.* 165; *Endl. gen. p.* 362.

Heads 3–5-flowered, aggregated into terminal or axillary glomerules; the flowers all equal and similar. Involucre compressed; the scales about 8, in 2 series, dry, oblong, alternately plane and conduplicate; the interior usually 3-nerved. Receptacle naked or obscurely alveolate. Corolla palmate (one of the sinuses being more deeply cleft than the others); the segments acuminate. Filaments smooth. Branches of the style semi-subulate. Achenia oblong, somewhat compressed, many-ribbed, hairy. Pappus in one or two rows of several chaffy bristles, dilated at the base.—Erect perennial herbs, with alternate mostly sessile feather-veined leaves. Corolla violet-purple.

§ *Pappus in a single series; the bristles straight and equal: glomerules terminating the branches, somewhat corymbed, involucrate.*—ELEPHANTOPUS, Cass., Less., DC.

1. *E. Carolinianus* (Willd.): stem hairy, corymbosely branched above; leaves somewhat hairy and scabrous; the radical ones ovate or obovate-oblong, crenate-serrate, tapering into a long margined petiole; the cauline ob-

long or lanceolate; the floral ones ovate-oblong, or cordate-ovate (usually longer than broad).—*Willd. spec.* 3. *p.* 2390 (excl. syn.); *Nutt.! gen.* 2. *p.* 187; *Ell. sk.* 2. *p.* 480; *Less. in Linnæa*, 4. *p.* 324; *DC.! prodr.* 5. *p.* 86. E. scaber, *Michx.! fl.* 2. *p.* 148; not of *Linn.*, except as to syn. *Gronov.*

In dry soil, Pennsylvania! to Florida! and Louisiana! July–Sept.—Stem about 2 feet high. Leaves membranaceous; some of the floral leaves often oblong, and longer than the glomerules.

2. *E. tomentosus* (Linn.): stem hirsute, nearly naked, simple, sparingly dichotomous and corymbose at the summit; leaves villous-tomentose beneath, hirsute-pubescent above; the radical ones large, obovate or oblong-spatulate, obtuse, crenate, narrowed at the base, sessile; the floral ones broadly ovate or cordate; scales of the involucre rigid.—*Linn.! spec. ed.* 1. *p.* 814, *& ed.* 2. *p.* 1314, excl. syn. *Browne*; *Pursh, fl.* 2. *p.* 582; *Less. l. c. p.* 326. E. nudicaulis, *Ell. sk.* 2. *p.* 481; *Poir. suppl.* 2. *p.* 543; *Hook. compan. to bot. mag.* 1. *p.* 96; *DC.! l. c.* E. Carolinianus *β.* simplex, *Nutt. gen.* 2. *p.* 187.

S. Carolina! to Florida! Alabama! Louisiana! and Arkansas! July–Sept.—Stem 1–2 feet high, naked, or sometimes with a single leaf below, resembling the radical ones, and a small lanceolate leaf at each bifurcation of the corymb; the floral leaves very broad, about the length of the glomerules, villous-tomentose, or somewhat silky. Glomerules large. Heads larger, and the scales more pubescent and rigid than in the preceding species.—This is the original E. tomentosus of Linnæus, as appears from the specimen of Clayton. It is more nearly allied to E. scaber than to E. Carolinianus, and Hooker thinks it is identical with the East Indian species. We know not how it is to be distinguished from that species, except by its larger and usually broader tomentose leaves, and more hairy involucre; and we have received from Western Louisiana a plant which exactly accords with the East Indian E. scaber.

3. *E. scaber* (Linn.): stem somewhat dichotomous or corymbose above, more or less hirsute; leaves somewhat pubescent or hairy and scabrous; the radical ones cuneiform-spatulate or oblanceolate, crenulate, tapering to the base, often petioled; the cauline few and small, lanceolate; the floral ones cordate-ovate, hairy.—*Linn. l. c.* excl. syn. *Gronov. &c.* (*Dill. Elth. t.* 106); *Less. l. c.*; *DC.! prodr.* 5. *p.* 86.

Near Alexandria, Louisiana, *Dr. Hale!*—Stem slender, 12–18 inches high, with only 2 or 3 very small cauline leaves; the radical ones about 6 inches long, an inch or a little more in width towards the summit, slightly scabrous and pubescent. Glomerules small.—The plant exactly accords with specimens from China and the peninsula of India. We can make little use of Lessing's character derived from the venation of the floral leaves and scales of the involucre.

Subtribe 2. PECTIDEÆ, *Less.*—Heads radiate. Branches of the style in the perfect flowers obtuse.—Leaves usually opposite. Flowers of the xanthic series (mostly yellow).

4. XANTHISMA. *DC. prodr.* 5. *p.* 94.

Heads many-flowered; the ray-flowers (neutral? or pistillate?) entire; those of the disk perfect. Involucre hemispherical; the scales imbricated, appressed, coriaceous, nearly oval, very obtuse. Receptacle fimbrillate; the fimbrillæ lacerate, about the length of the achenium. Corolla of the disk

5-cleft, regular; the lobes erect. Anthers not caudate. Style of the ray short and simple, included within the tubular part of the corolla; that of the disk 2-cleft at the summit; the branches included, linear, obtuse, slightly and minutely hispid. Achenia obovate, scarcely angled, pubescent. Pappus composed of elongated unequal acuminate chaff; the outermost rather shorter and narrower.—An annual or biennial erect glabrous herb, with a simple stem, loosely branched or corymbose at the summit; the branches erect and leafy. Cauline leaves alternate, rather rigid (not dotted with glands nor fringed with bristles), sessile, oblong or linear, 1-nerved, chiefly entire, sometimes acutely serrate at the summit. Flowers yellow. *DC.*

X. Texanum (DC. l. c.)

Texas, *Berlandier;* in woods.—Habit of Centaurea cerinthefolia. *DC.*—This plant is wholly unknown to us: it is perhaps from the southern part of Texas, and scarcely within the limits of this work.

5. PECTIDOPSIS. *DC. prodr.* 5. *p.* 98.

Heads many-flowered; the flowers of the ray in a single series, ligulate, pistillate; those of the disk perfect, tubular. Involucre cylindrical-campanulate; the scales about 8, in a single series, somewhat conduplicate. Receptacle naked. Corolla of the disk 5-toothed, regular. Branches of the style semicylindrical, short. Achenia crowned with a very short scarious minutely about 5-toothed and somewhat lacerate pappus.—A very small annual herb, with the habit of Pectis, nearly glabrous, branching from the base. Leaves opposite, narrowly linear, punctate with large pellucid glands, somewhat connate at the base, near which the margins are fringed with a few bristles. Heads on short peduncles terminating the branches. Flowers yellow; those of the ray 7–8.

P. angustifolia (DC. l. c.)—Pectis angustifolia, *Torr.! in ann. lyc. New York*, 2. *p.* 214.

On the Rocky Mountains, in about lat. 41°, *Dr. James!*—Peduncles much shorter than the leaves.

6. PECTIS. *Linn.* (excl. spec.); *Less. in Linnæa*, 6. *p.* 708, *& syn. p.* 153. *DC. prodr.* 5. *p.* 98.

Heads several-flowered; the flowers of the ray in a single series, ligulate, pistillate; those of the disk perfect, bilabiate. Involucre somewhat cylindrical; the scales 5–8, in a single series, often involute or conduplicate. Receptacle naked. Corolla of the disk bilabiate, (the two inner sinuses deeper than the others); those of the ray ligulate, the ligule longer than the tube. Branches of the style semicylindrical, short. Achenia striate. Pappus of the disk and ray similar, in a single series, chaffy, mostly pointed with serrulate (often unequal) bristles.—Mostly annual (tropical American) herbs. Leaves opposite, connate at the base, 1-nerved, punctate with pellucid glands; the margin somewhat cartilaginous, and fringed with scattered bristles. Heads on slender pedicels, or often sessile. Flowers yellow.

1. *P. linifolia* (Linn.): stem diffusely branched; leaves linear, mucronate, dotted with large glands, ciliate with bristles towards the base; heads on slender minutely bracteolate pedicels, 4–18-flowered; scales of the involucre 4–6, elliptical-lanceolate, equal, conduplicate, with broad scarious margins, not glandular; pappus of rather broad chaff, mostly awned, the bristles in the ray-flowers 2, equal, in the disk usually 5.—*Linn. amœn. acad.* 5. *p.* 107, *& spec. ed.* 2. *p.* 1250*; Lam. ill. t.* 684*; Less. l. c.; DC. prodr.* 5. *p.* 99.

Key West, *Mr. Bennett! Mr. Blodgett!*—A native of Jamaica, St. Thomas, &c.

TRIBE II. EUPATORIACEÆ. *Less.*

Heads discoid, with the flowers all tubular and perfect (homogamous), or sometimes heterogamous; the ray-flowers either tubular or ligulate. Style cylindrical above; the branches usually much elongated, obtuse or clavate, puberulent or papillose externally towards the summit; the stigmatic lines inconspicuous, terminating near the middle of the branches of the style, not confluent at their termination. Anthers never caudate.—Flowers mostly of the cyanic series (white, blue, or purple). Leaves commonly opposite.

CONSPECTUS OF THE GENERA.

Subtribe 1. EUPATORIEÆ.—Heads discoid, homogamous.

Div. 1. AGERATEÆ.—Pappus chaffy, aristate-squamellate, or coroniform.

7. CŒLESTINA. Pappus coroniform or cup-like.
8. AGERATUM. Pappus of 5–10 distinct often aristate chaffy scales.
9. SCLEROLEPIS. Pappus of 5 obtuse corneous scales. Leaves verticillate.

Div. 2. ADENOSTYLEÆ.—Pappus of slender or capillary bristles.

* *Achenia striate or ribbed.*

10. CARPHEPHORUS. Receptacle chaffy. Pappus barbellate.
11. LIATRIS. Receptacle naked. Scales of the involucre not striate. Lobes of the corolla elongated.
12. CLAVIGERA. Receptacle naked. Scales of the involucre deeply striate. Teeth of the corolla very short. Pappus plumose-barbellate.
13. KUHNIA. Receptacle naked. Teeth of the corolla short. Pappus plumose.
14. BULBOSTYLIS. Receptacle naked. Pappus scabrous. Heads 10–25-flowered.
15. BRICKELLIA. Receptacle naked. Pappus scabrous. Heads 30–50-flowered.

* * *Achenia 5-angled, not striate. Pappus scabrous.*

16. EUPATORIUM. Receptacle naked, flat. Scales of the involucre numerous.
17. MIKANIA. Receptacle naked, flat. Scales of the involucre (and flowers) 4–5.
18. CONOCLINIUM. Receptacle conical, naked.

Subtribe 2. TUSSILAGINEÆ.—Heads with the flowers heterogamous, or diœcious.

19. NARDOSMIA. Heads corymbose, many-flowered, somewhat diœcious.
20. TUSSILAGO. Head solitary, many-flowered, heterogamous; the pistillate flowers ligulate, in several series.
21. ADENOCAULON. Heads few-flowered, heterogamous; the flowers all tubular.

Subtribe 1. **EUPATORIEÆ**, *DC.*—Heads discoid; the flowers all perfect and similar, usually white, rose-color, or purple (rarely ochroleucous), never yellow.

Div. 1. **AGERATEÆ**, *Less.*—Pappus composed of chaffy often unequal scales, sometimes aristate or coroniform.

7. CŒLESTINA. *Cass. dict.* 6. *suppl. p.* 8, & 26. *p.* 227; *Less. syn. p.* 155; *DC. prodr.* 5. *p.* 107.

Heads many-flowered. Involucre cylindrical-hemispherical; the scales numerous, narrow, somewhat imbricated. Receptacle convex, chaffy or naked. Achenia glabrous, 5-angled. Pappus coroniform or cup-like, slightly toothed, or sometimes produced into one or two longer teeth or chaffy scales.—Annual (tropical American) branching herbs, with terete stems, and opposite petioled and toothed leaves. Heads in rather dense corymbs, pedicellate. Flowers blue or purple.

§. *Receptacle naked.*—Ageratoides, *DC.*

1. *C. maritima*: stem decumbent, branching, nearly glabrous; leaves smooth and glabrous, slightly fleshy, ovate or oval, serrate, tapering into a slender petiole; tube of the corolla sparsely pubescent with jointed hairs; pappus minute and coroniform, often with one or two slightly produced teeth, sometimes obsolete.

Key West, Florida, *Mr. Bennett! Mr. Blodgett!*—Leaves scarcely an inch long. Flowers blue.—We have seen specimens of a very similar plant from Cuba; which however has a pappus of 5 distinct mostly aristate chaffy scales, and is therefore an Ageratum: it agrees with the description of Kunth's A.? maritimum, (from the same locality) as to the foliage, &c., but not as to the corolla and pappus.—Surely Cœlestina (at least the section Ageratoides) and Ageratum are not sufficiently distinct.

8. AGERATUM. *Linn.*; *Gærtn. fr. t.* 165; *DC. prodr.* 5. *p.* 108.

Heads many-flowered, subglobose. Scales of the involucre numerous, imbricated, linear, acuminate. Receptacle naked. Corolla tubular, dilated above, 5-lobed. Branches of the style exserted, cylindraceous, rather obtuse. Achenia 5-angled, narrowed at the base, with a rather large callus. Pappus of 5–10 distinct chaffy scales, either aristate-acuminate, or obtuse and pectinate.—Mostly annual (tropical) herbs, with opposite petioled and toothed leaves, and corymbose heads. Flowers blue or white.

1. *A. conyzoides* (Linn.): stem branching; leaves ovate, rhomboid, or cordate, on rather long petioles; pappus of 5 somewhat serrate chaffy scales, dilated at the base, acuminate-aristate; the subulate awns as long as the corolla (flowers blue or white).—*Linn. spec.* 2. *p.* 839; *Swartz, obs. p.* 301; *Schkuhr, handb. t.* 238; *Hook. exot. fl. t.* 15; *DC. prodr.* 5. *p.* 108.

Wet places near Savannah, Georgia, *Mr. Curtis!* April–June.—Found in almost every country within or near the tropics, varying greatly in the form of the leaves; the stem and petioles also sometimes hispid, but occasionally almost glabrous. In this country it has only been detected by Mr. Curtis, whose specimens seem to accord with the variety Mexicanum (A. Mexicanum, *Bot. mag. t.* 2524), except that the flowers are white.

9. SCLEROLEPIS. *Cass. dict.* 25. *p.* 365, *&c.; Less. syn. p.* 136.

Head many-flowered. Scales of the involucre linear, equal, in a double series. Receptacle naked. Corolla tubular-infundibuliform, 5-toothed, glabrous. Branches of the style much exserted, somewhat clavate. Achenia 5-angular. Pappus of 5 almost horny short oval and obtuse scales, in a single series.—A glabrous perennial (aquatic) herb; with simple stems, procumbent at the base, terminated usually by a single head. Leaves verticillate (5–6 in a whorl), linear, entire, 1-nerved (resembling those of Hippuris). Flowers pale purple.

S. verticillata (Cass. l. c.)—*DC.! prodr.* 5. *p.* 114. Sparganophorus verticillatus, *Michx.! fl.* 2. *p.* 95, *t.* 42; *Nutt.! gen.* 2. *p.* 139; *Ell. sk.* 2. *p.* 312. Æthulia uniflora, *Walt. Car. p.* 195.
Shallow water in pine barrens, New Jersey (at Quaker Bridge!) to Florida! July–Sept.—Stem 1–2 feet high, very leafy, a little pubescent at the summit, as also the involucre.—We have a form from Florida, with very slender stems, only about 6 inches high, and the involucre nearly glabrous.

Div. 2. ADENOSTYLEÆ, *DC.*—Pappus composed of slender hair-like bristles, either scabrous or plumose, in one or more series.

10. CARPHEPHORUS. *Cass. in bull. philom.* 1816, *& dict. sci. nat.* 7. *p.* 149; *DC. prodr.* 5. *p.* 132. (excl. spec. no. 2?)

Species of Liatris, *Michx., Nutt., DC.*

Heads many- (about 20-) flowered. Scales of the involucre imbricated in 3–5 series, ovate or lanceolate, appressed. Receptacle chaffy; the scales (subtending the flowers) lanceolate or linear, rigid, 3-nerved, mostly shorter than the flowers, deciduous with the fruit. Corolla more or less dilated above; the lobes ovate or lanceolate, mostly short. Anthers usually included. Branches of the style exserted, cylindraceous, obtuse. Achenia terete or somewhat angled, narrowed towards the base, 10-ribbed. Pappus of numerous (30–40) barbellate (rarely minutely plumose) unequal bristles, somewhat in a double or triple series.—Perennial herbs (mostly North American), with the habit of Liatris, from which the chaffy receptacle chiefly distinguishes it. Root, or caudex, thickened, but not tuberous. Stem simple, or corymbose at the summit, leafy. Leaves impressed-punctate, rigid, entire (or toothed?); the cauline ones commonly appressed. Heads corymbose-cymose, rarely racemose. Flowers purple.

This genus was established by Cassini on a specimen preserved in the herbarium of Jussieu, with no label or any indication of its native country, whence it has not subsequently been recognized. De Candolle having added a second species, founded on the description of Liatris Baicalensis of Adams, which is said to have a chaffy receptacle, the genus has been thought to be Siberian; although a third, and doubtless genuine species from Mexico, and subsequently a fourth from Brazil, are also given by De Candolle. Cassini's original species is without doubt the Liatris squamosa of Nuttall; in which the chaffy receptacle (first pointed out to us by Dr. Chapman) had escaped the notice both of Nuttall and Hooker. On examining the allied species of Liatris, we find that all those with many-flowered heads disposed in corymbose cymes also belong to the genus; which is well marked in habit.

* *Leaves linear-subulate, appressed: heads cymose or racemose.*

1. *C. Pseudo-Liatris* (Cass. l. c.): stem virgate, simple, tomentose-pubescent; leaves linear-subulate, carinate, rigid, closely sessile, nearly glabrous, sparsely punctate; the radical ones elongated; the cauline short, very numerous, closely appressed; the uppermost pubescent; heads few (3–7), in a simple contracted cyme; the branches imbricated with very short subulate leaves; scales of the involucre ovate-lanceolate, rigid, appressed, tomentose-pubescent; achenia minutely hairy; pappus barbellate.—Liatris squamosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 73; *Hook.! compan. to bot. mag.* 1. *p.* 95.

β. heads (13–14) racemose. *Hook. l. c.*

Dry soil, Alabama, *Dr. Gates!* Middle Florida, *Dr. Chapman!* Also Covington and Jacksonville, Louisiana, *Drummond* (with var. *β.*), & Pascagoula, Mississippi, *Dr. Riddell!*—Stem about 2 feet high, very straight; the whole plant of a pale grayish hue. Radical and lower leaves 4–5 inches long; the cauline ones diminishing in size upwards, those at the summit and on the peduncles less than half an inch in length, strongly appressed. Flowers 20 or more in each head, (instead of 6–8 as described by Nuttall), bright purple. Scales of the involucre imbricated in about 3 series. Chaff of the receptacle lanceolate, resembling the inner scales of the involucre, rigid, colored and often hairy at the summit, nearly as long as the flowers.—We have not seen the var. *β.*

* * *Leaves plane, lanceolate, spatulate, or oblong: heads corymbose-cymose.*

2. *C. tomentosus:* stem tomentose-puberulent above, corymbose at the summit; leaves punctate, mostly nearly glabrous, acute; the radical ones lanceolate or lanceolate-spatulate, tapering into a petiole, somewhat 3-nerved; the cauline small, scattered, lanceolate or ovate, sessile, slightly appressed; the uppermost pubescent; heads 1–5 on each branch of the loose and spreading corymbose cyme; scales of the somewhat cylindrical-campanulate involucre ovate or ovate-lanceolate, acute, appressed, or with slightly spreading tips, very tomentose and glandular; lobes of the corolla ovate-lanceolate; pappus rather strongly barbellate.—Liatris tomentosa, *Michx.! fl.* 2. *p.* 93; *Pursh, fl.* 2. *p.* 510; *Curtis! pl. Wilmingt., in Boston, jour. nat. hist.* 1. *p.* 127; not of *Ell.* L. Walteri, *Ell.! sk.* 2. *p.* 285; *DC. l. c.* Anonymos uniflora, *Walt. Car. p.* 198.

Margin of swamps, Virginia (*Pursh*) and North Carolina, *Michaux! Mr. Croom! Mr. Curtis!* to Georgia, *Dr. MacBride!* (*Elliott.*) Sept.–Oct.—Stem about 2 feet high. Cyme sometimes simple with 5 or more heads, but often corymbose with the branches elongated and much spreading. Scales of the involucre imbricated in 4 or 5 series, hoary but often somewhat colored, without scarious margins. Corolla deep purple. Pappus purplish. Chaff of the receptacle (often wanting in the centre of the head) narrowly linear, a little hairy at the tip, rather shorter than the flowers.

3. *C. bellidifolius:* low, nearly glabrous; stems numerous from the same root, slender, branching above; radical leaves spatulate, 3-nerved, tapering into a petiole, punctate with scattered impressed dots; the cauline small and

scattered, mostly linear; heads commonly solitary upon each slender branch of the nearly simple corymb; scales of the involucre rather loose, oblong and obovate, very obtuse, not margined; the outermost spreading; lobes of the corolla lanceolate-linear, elongated; achenia hairy; pappus densely plumose-barbellate.—Liatris bellidifolia, *Michx.! fl.* 2. *p.* 93; *Nutt.! gen.* 2. *p.* 133; *DC. prodr.* 5. *p.* 132.

Dry sandy hills, near Wilmington, North Carolina, *Michaux! Nuttall! Delile! Mr. Curtis! &c.* Sept.—Plant 8–12 inches high; the stem often branched from about the middle. Scales of the campanulate involucre in about 3 series, glabrous, the margin scarcely scarious or ciliate; the outermost smaller and bracteolate; the second series obovate or obovate-oblong; the innermost linear-oblong and much longest. Bristles of the pappus almost plumose to the naked eye. Chaff of the receptacle narrowly linear, as long as the flowers, deciduous.

4. *C. corymbosus:* stem solitary, tall, stout, somewhat hirsute-tomentose; leaves nearly glabrous, about 1-nerved; the radical ones oblanceolate, obtuse, gradually tapering to the base; the cauline small and numerous, oblong, closely sessile; heads about 20, in a dense terminal corymbose cyme; the branches short, tomentose-hirsute, scales of the involucre nearly glabrous, appressed, oval, very obtuse, with a broad scarious and somewhat fringed margin; lobes of the corolla ovate, very short; achenia slightly hairy; pappus barbellate.—Liatris corymbosa, *Nutt.! gen.* 2. *p.* 132 (excl. syn.); *DC. l. c.* L. tomentosa? *Ell. sk.* 2. *p.* 284, not of *Michx.*

Damp sandy soil, and along the margin of swamps, N. Carolina! to Georgia! and Florida! Sept.–Oct.—Stem 2–4 feet high, striate. Leaves somewhat fleshy, 1-nerved or very slightly tripli-nerved, sometimes obscurely punctate; the radical ones 4–6 inches long, very gradually narrowed to the base; the cauline (gradually diminished to about half an inch in length,) appressed. Inner scales of the involucre scarcely longer than the others. Corolla pale purple. Pappus mostly white. Chaff of the receptacle linear or lanceolate, with scarious tips, shorter than the flowers; often wanting in the centre of the head.

11. LIATRIS. *Schreb. gen. p.* 542; *DC. prodr.* 5. *p.* 128. (excl. spec.)

Heads few–many-flowered. Scales of the involucre few or numerous, imbricated, not striate. Receptacle naked. Corolla tubular, 5-lobed, the lobes usually elongated. Branches of the style much exserted, cylindraceous or somewhat flattened, obtuse. Achenia nearly terete, tapering to the base, about 10-ribbed. Pappus of numerous (15–40) plumose or barbellate bristles.—Perennial (North American) herbs or very rarely shrubby plants, mostly with simple stems and a tuberous root. Leaves alternate or scattered, usually lanceolate or linear and entire, with a rigid or cartilaginous margin, 1–5-nerved, rarely veiny. Heads disposed in an elongated spike or raceme (flowering from the summit downwards), sometimes (as if by accident) paniculate, rarely corymbose. Flowers purple, occasionally varying to white; the corolla, style, &c. commonly dotted with scattered resinous globules.

§ 1. *Root a globose mostly naked tuber (impregnated with a terebinthine substance): leaves linear or lanceolate, gramineous, 1–5-nerved, mostly punctate with impressed and resinous dots: heads in a virgate spike or raceme: involucre manifestly imbricate: lobes of the corolla lanceolate or linear:*

pappus evidently plumose, or minutely and densely plumose-barbellate. —EULIATRIS. (Euliatris & Suprago, *DC.*)

* *Inner scales of the* (*4–5-flowered*) *involucre longer than the corolla, produced into a dilated and ligulate colored appendage: pappus very plumose.* (Calostelma, *Don.*)

1. *L. elegans* (Willd.): stem and involucre villous-pubescent; leaves glabrous, punctate; the radical ones spatulate or oblanceolate, 3–5-nerved; the upper cauline ones linear, short, spreading or reflexed, often mucronate; spike or raceme virgate, dense; the pedicels bracteolate, often very short; scales of the involucre 10–12, glandular; the appendages of the inner ones ovate or lanceolate (bright purple or sometimes white), spreading; achenia villous.—*Willd.! spec.* 3. *p.* 1635; *Michx.! fl.* 2. *p.* 91; *Bot. reg. t.* 267; *Nutt.! gen.* 2. *p.* 132; *Ell. sk.* 2. *p.* 279; *DC.! prodr.* 5. *p.* 129. Stæhelina elegans, *Walt.! Car. p.* 202. Serratula speciosa, *Ait.! Kew.* (*ed.* 1) 3. *p.* 138. Eupatorium speciosum, *Vent. hort. Cels. t.* 79.

β. raceme compound (doubtless an accidental or occasional state).

Dry barren soil, Virginia to Florida! Louisiana! and Texas! Aug.–Sept.—Stem 3–5 feet high, strict. Spike or raceme compact, a foot or more in length. Bristles of the pappus about 18, in a single series.

* * *Scales of the involucre very numerous and imbricated in several series, without petaloid appendages: heads* (*few*) *cylindrical or slightly clavate, many-* (20–60-) *flowered: lobes of the corolla hirsute within; pappus very plumose.*

2. *L. squarrosa* (Willd.): pubescent or hairy, or nearly glabrous, very leafy; leaves linear, elongated, rigid, scarcely punctate; the lower ones 3–5-nerved; the radical very long; heads few (sometimes solitary), sessile or on short pedicels, many-flowered; scales rigid, ciliate, not punctate, with more or less elongated and pointed foliaceous spreading extremities; the inner ones mucronate-acuminate; the outermost often bracteolate and resembling the upper leaves; achenia minutely pubescent.—*Willd.! l. c.*; *Michx.! fl.* 2. *p.* 92; *Ell.! sk.* 2. *p.* 282; *Hook. fl. Bor.-Am.* 1. *p.* 306; *DC.! prodr.* 5. *p.* 129. Cirsium tuberosum &c., *Dill. Elth. t.* 71, *f.* 82. Serratula squarrosa, *Linn.! spec.* 2. *p.* 818. Pteronia Caroliniana, *Walt.! Car. p.* 292.

β. floribunda: heads numerous (20 or more), in a somewhat paniculate or branched raceme; the pedicels, or rather branches, elongated and leafy.

γ. compacta: glabrous; leaves crowded, very narrow; heads several, closely sessile, approximate; scales of the involucre lanceolate, with long mucronate points, all erect; the exterior linear and resembling the uppermost leaves.

δ. intermedia (DC.): mostly hairy; heads (1–5) turbinate-cylindrical, pedicellate; exterior scales of the involucre elongated and foliaceous, erect; the interior acute, scarcely or not at all squarrose.—L. intermedia, *Lindl. bot. reg. t.* 948.

Dry barren or sandy soil, Upper Canada! to Florida! and Texas! (*γ.* Arkansas, *Dr. Leavenworth!*) July–Sept.—Stem 1–3 feet high, often nearly glabrous, sometimes almost hirsute, as well as the leaves and involucre. Heads about an inch long; the points of the upper scales often purplish. Flowers bright purple. Bristles of the pappus 18–20, often purplish.—The var. *γ.* is the most remarkable form; but in the ordinary plant the scales are sometimes erect. Through the not uncommon var. *δ.* this species seems almost to pass into L. cylindracea, which however it is perhaps safer to consider distinct.—*Blazing Star. Button Snake-root. Rattle-snake's-master.* (One of the popular antidotes for the bite of the Rattle-snake.)

3. *L. cylindracea* (Michx.): glabrous or slightly hairy; stems low, leafy; leaves linear, rigid, scarcely punctate, mostly 1-nerved; heads (1–7, rarely 12) turbinate-cylindrical, sessile or pedicellate, 16–20-flowered; the scales of the involucre all short and appressed, with rounded or obtuse abruptly mucronulate tips, often ciliate, not punctate; achenia pubescent.—*Michx.! fl.* 2. *p.* 93; *Ell.! sk.* 2. *p.* 275; *DC. l. c.*; not of *Pursh.* L. stricta, *MacNab! in Edinb. phil. jour.* 19, *p.* 60.

Dry woods and prairies, Michigan! (and N. W. Territory, *Dr. Houghton!*) Upper Canada! Illinois! Missouri! &c., apparently nearly confined to the Western States. July–Sept.—Stem 6–18 inches high. Heads about an inch long; the exterior scales of the involucre commonly very short, rarely somewhat prolonged or foliaceous. Flowers bright purple.

* * * *Scales of the* (5–30-*flowered*) *involucre without petaloid appendages: lobes of the corolla glabrous within.*

† Pappus evidently plumose to the naked eye: heads 3–6-flowered.

4. *L. punctata* (Hook.): stems several from the same tuberous-fusiform root, stout, nearly glabrous, very leafy; leaves linear, rigid, manifestly punctate on both surfaces with impressed dots, glabrous, the margins often remotely ciliate with bristly hairs; heads in a dense spike (which is often leafy towards the base), 4–6-flowered; scales of the cylindraceous involucre oblong, conspicuously punctate. imbricated, appressed, with more or less spreading mucronate-acuminate tips; the margins lanuginous-ciliate; achenia hairy; pappus very plumose.—*Hook.! fl. Bor.-Am.* 1. *p.* 306, *t.* 55; *DC. l. c.* L. cylindrica, *Torr.! in ann. lyc. New York*, 2. *p.* 210. L. resinosa, *DC.! prodr.* 5. *p.* 129 (pl. Arkans.), not of *Nutt.*

β. leaves nearly all very narrowly linear; the margins remotely ciliate or naked; scales of the involucre narrower, tapering somewhat gradually into a cuspidate-acuminate point, at least the inner ones; spike usually short; stem often slender.

γ. leaves conspicuously ciliate with hispid hairs; inner scales of the involucre purplish above.

Arid plains and prairies, Saskatchawan, *Drummond, Douglas!* and throughout the country between the Upper Mississippi and the Missouri, *Mr. Nicollet!*[*] to Arkansas, *Dr. James! Dr. Pitcher! Dr. Leavenworth!* and Texas, *Drummond!* Aug.–Sept.—Stems 8 inches to 2 or 3 feet high, usually several from the thick and somewhat knotted often fusiform root, leafy to the summit. Lower leaves 3–5 inches long, slightly 3-nerved; the others 1-nerved, varying from 3 lines to less than a line in width, pungently acute. Spike 3–4 to 10 inches long. Flowers reddish-purple. Bristles of the pappus about 30, purplish or nearly white. Achenia almost villous when young, 3–4 lines long.—A well-marked species; the varieties we have indicated passing into each other. Some of the specimens of the collection made in Mr. Nicollet's expedition (our var. *γ.*), have the margin of the leaves conspicuously fringed with rigid jointed hairs: others are very sparsely ciliate, with the leaves and involucral scales narrower, nearly like one of the forms from Texas.

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[*] We are greatly indebted to the kindness of Mr. Nicollet, for an extensive collection of dried specimens, made during his survey of the country between the Upper Missouri and the sources of the Mississippi, under the orders of the Secretary of War. The collection was formed by Mr. Charles A. Geyer, an assiduous German botanist who was attached to the expedition. The specimens are very complete, and in the finest preservation; and the localities, with other particulars, have been carefully recorded by Mr. Geyer: they were chiefly gathered during the autumn and latter part of summer; their earlier, and perhaps most interesting collections were unfortunately lost.

5. *L. mucronata* (DC.): glabrous; stem slender, very leafy; leaves narrowly linear, very acute, minutely punctate; the lowermost elongated, the uppermost short, almost setaceous or subulate; spike long and narrow, dense; the heads (small) sessile, or on appressed pedicels shorter than the subulate bracts, 3–5-flowered; scales of the narrow and somewhat cylindrical involucre few, (purplish, the margins not scarious,) appressed, shorter than the pappus, ovate-lanceolate, mucronate, slightly ciliate; the exterior shorter; pappus manifestly plumose.—*DC. prodr.* 5. *p.* 129.

Texas, "in the eastern districts, *Berlandier*," *Drummond!* Western Louisiana, *Dr. Hale!*—Stem 2–4 feet high, virgate; the slender spike sometimes 2 feet long. Lower leaves about 2 lines wide; the upper crowded, 2–3 inches, and gradually diminishing to less than an inch in length, and less than half a line in width, flat. Heads 4–5 lines long; the lowermost shorter, the uppermost much longer than the bracts. Corolla bright purple. Pappus longer than the achenium, of about 30 often purplish bristles, manifestly plumose to the naked eye, but less so than in L. punctata.—Varies with the achenia minutely pubescent throughout, or on the ribs alone, or perfectly glabrous; and with the scales of the involucre either abruptly cuspidate-mucronate, or gradually narrowed into a subulate-mucronate point; the latter being more common in the specimens we have examined. The plant of De Candolle (which we have not compared with our own) is said to have pubescent achenia, and the obtuse scales abruptly mucronate: it may be different from the plant we have described, and possibly what we consider a narrow-leaved variety of L. punctata; but that species would not be compared with L. tenuifolia, and besides is well characterized by De Candolle, under the name of L. resinosa.

6. *L. Boykinii:* nearly glabrous; stem slender, erect; leaves linear, punctate; the lower elongated, the upper short and setaceous; spike virgate; the heads rather crowded, subsessile, or on appressed pedicels much shorter than the subulate bracts, 3–4-flowered; scales of the involucre (about 8) glabrous, scarcely punctate; the outer ones short, lanceolate-subulate; the interior lanceolate or linear, with scarious margins and acuminate spreading summits, equalling or exceeding the pappus; achenia villous; pappus manifestly plumose.

Near Columbus, Georgia, *Dr. Boykin!* Aug.–Sept.—Stem 1–2 feet high. Leaves rather scattered. Spike 6–10 inches long. Heads half an inch in length, exceeding the bracts, on very short pedicels if any. Inner scales of the involucre membranaceous, with scarious and slightly colored margins and tips. Flowers apparently pale purple. Pappus plumose to the same degree as the preceding, more so than any of the following species. Heads larger than L. mucronata, or especially L. tenuifolia, rather smaller than those of L. secunda.

7. *L. tenuifolia* (Nutt.): glabrous; stem very slender; radical and lower leaves crowded, very narrowly linear or almost filiform, elongated, often hairy towards the base, punctate; the upper ones very short, setaceous, scattered; raceme virgate; heads (small) 5-flowered, crowded; the pedicels mostly bracteolate and longer than the setaceous bracts, sometimes branching; scales of the involucre (about 10) erect, glabrous, not punctate, usually mucronulate; the outermost ovate-lanceolate, very short; the inner oblong, obtuse, with membranaceous (purplish) margins, rather shorter than the pappus; achenia villous; pappus barbellate-plumose.—*Nutt.! gen.* 2. *p.* 131; *Ell.! sk.* 2. *p.* 275; *DC. prodr.* 5. *p.* 128.

β. radical leaves broader, coriaceous.—L. lævigata, *Nutt! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 285.

Dry pine barrens, N. Carolina to Georgia! and Florida! Aug.–Oct.—Stem 2–4 feet high. Radical leaves resembling those of Pinus palustris, as remarked by Nuttall (a few of the exterior sometimes 2 lines broad), rigid, forming a close tuft in the manner of Xerophyllum. Raceme elongated; the pedicels 8–12 lines long. Flowers purple. Achenia turbinate. Pappus scarcely plumose to the naked eye; the bristles 20–25.—Like most species of this section, the pedicels are sometimes elongated and branched, forming a paniculate inflorescence. Heads usually quite small.

† † Pappus densely barbellate: heads 3–40-flowered.

8. *L. secunda* (Ell.): minutely pubescent or glabrous; stem slender, decurved; leaves linear, short, rather obtuse, the upper ones bract-like; raceme virgate; the heads all turned to one side, on short mostly recurved and bracteolate pedicels, 4–5-flowered; involucre cylindrical; scales 12–14, with slightly scarious margins, often resinous-punctate; the exterior oval and very short; the interior as long as the pappus, oblong-lanceolate, mucronate-acuminate; achenia villous: pappus minutely and densely plumose-barbellate. —*Ell.! sk.* 2. *p.* 278: *DC.! prodr.* 5. *p.* 131.

Dry sandy soil, S. Carolina! to Florida! Aug.–Sept.—Stem 1–3 feet high. Raceme 6–12 inches long, curved, rarely slightly compound, beautifully unilateral. Heads 6–8 lines long; the scales appressed, mostly 1-nerved. Bracts and bracteoles subulate, very short. Flowers light purple.

9. *L. gracilis* (Pursh): somewhat cinereous-pubescent or nearly glabrous; stem slender, simple, bearing numerous heads in a long virgate raceme, sometimes compound or paniculate; leaves linear or lanceolate-linear, short, 1-nerved, often sparsely pilose-ciliate towards the base; the lower ones lanceolate, obtuse; heads (small) on divaricate pedicels, few-flowered; scales of the somewhat cylindraceous involucre few, oblong or elliptical, obtuse, resinous-punctate, appressed, shorter than the barbellate pappus; achenia turbinate, villous.

α. nearly glabrous; raceme elongated, simple, or slightly compound at the base; heads (5–7-flowered) on elongated divaricate, or even reflexed, simple pedicels.—L. gracilis, *Pursh, fl.* 2. *p.* 508.

β. heads 3–5-flowered, in a slender virgate raceme, on filiform more or less elongated divaricate (or somewhat reflexed) pedicels; of which the lower are furnished with scattered bracteoles similar to the exterior scales of the involucre, and rarely bearing one or two subsessile lateral heads; scales of the cylindraceous involucre pubescent and ciliate; the outermost very short, often slightly acute.—L. pauciflosculosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 71.

γ. raceme virgate, simple, or frequently branched or paniculate below; heads (3–5-flowered) on short divaricate pedicels, or sometimes almost sessile; otherwise as in β.

δ. inflorescence entirely paniculate; the branches simple, ascending; a few of the uppermost only bearing single heads, short; the lower successively elongated, slender, bearing few or several racemose (3–5-flowered) heads, on short pedicels, or sometimes almost sessile; otherwise as in β. and γ.

Pine barrens, Georgia! Alabama! and Florida! γ. Alabama, *Mr. Buckley!* Aug.–Oct.—Stem 1–3 feet high, usually clothed with a minute somewhat cinereous pubescence. Leaves rather thick, spreading, minutely punctate, often obtuse, tapering to the base; the upper 1–2, the lower 3–5 inches in length, sometimes hairy. Raceme, when simple, 4–15 inches long; with the pedicels 1½ to 2 inches long in Pursh's plant (*herb. Banks.*), nearly an inch long (about the length of the bracteal leaves) in our var. β., shorter, but very variable in the other forms. Heads smaller than in any other species of this section, except L. tenuifolia; the scales of the involucre 7–9, mostly pubescent and ciliate. Flowers bright purple.—The plants here arranged (β. γ. & δ.) are undoubtedly different forms or states of one and the same well-marked species, differing in no respect except the developement of the inflorescence, which affords most fallacious characters in this genus. There is an obvious tendency to branch in the inflorescence of all the racemose species, which is manifest, not only when the summit of the stem receives an injury, but in most very vigorous individuals; an almost necessary result of the successive developement of the heads from the apex of the stem or branch downwards, or outwards, (in which the plants with a racemiform disposition of the heads do not differ from other Compositæ,) which effectually preventing farther growth from the summit, the powers of the plant are directed to the production of additional heads, either from the axils of the upper cauline leaves, or of the bracts with which the pedicels (peduncles), especially the lower ones, are usually furnished. This is particularly exemplified in the present species; which exhibits almost every gradation between the simple racemiform inflorescence, and a kind of panicle which results from the developement throughout of lateral heads on the otherwise simple branches.—We regret that we have not been able to settle the synonymy of several species in this difficult genus. Mr. Bennett, who has most obligingly compared fragments from our specimens of this and other allied species with those preserved in the Banksian herbarium, considers our var. β. as probably identical with the Liatris gracilis of Pursh; the differences consisting chiefly in the degree of pubescence, and the length of the peduncles or branches of the inflorescence. As the (unexpanded) heads in Pursh's specimen are globose-ovate and at least 6-flowered, we were strongly inclined to consider that plant identical with a form of the following species; but Mr. Bennett, on comparing the two, did not recognize the resemblance. If the species here described should prove distinct from L. gracilis, it will retain the appropriate name of L. pauciflosculosa, *Nutt.*

10. *L. graminifolia* (Willd.?): glabrous or sparsely hairy; stem slender; leaves linear, somewhat scattered, 1-nerved, usually ciliate towards the base with scattered hispid hairs; the lowermost elongated; heads 7–9- (rarely 10–14-) flowered, spicate or racemose, sometimes partly paniculate; involucre obovoid-turbinate or broadly obconical, acute at the base; the scales (12–20) regularly imbricated in several series, appressed, spatulate or oblong, very obtuse, sometimes slightly mucronulate, mostly resinous-punctate and with slight scarious margins; the exterior very short, roundish-oval or obovate; achenia villous-pubescent; pappus densely barbellate.—Anonymos graminifolius & ramosus, *Walt. Car. p.* 197?

α. heads rather small, 7–9-flowered, mostly sessile and rather remote, forming a slender spike; lower bracts longer, the uppermost shorter than the heads.—L. graminifolia, (*Pursh, fl.* 2. *p.* 508?) *Nutt.! gen.* 2. *p.* 131; *Ell.! sk.* 2. *p.* 274; *DC.! prodr.* 5. *p.* 130, (excl. pl. cult., which belongs to L. spicata!)

β. heads larger, 7–14-flowered. (Varies, 1. with the heads few or numerous, somewhat scattered, sessile or nearly so: 2. heads few or numerous, in a simple raceme; the pedicels sometimes shorter, sometimes much longer than the heads, erect-spreading or slightly recurved: 3. heads numerous, approximate, sessile; the inflorescence branched below, the heads on the short simple branches also sessile.)—Serratula foliis linearibus, floribus solitariis sessilibus, *Gronov.! fl. Virg. ed.* 1. *p.* 92.

γ. heads small, 6–12-flowered, on spreading or often recurved pedicels, forming a long virgate raceme, sometimes compound or paniculate at the base.—L. gracilis, *Ell. l. c.*, not of *Pursh?* L. pilosa β. gracilis, *Nutt. l. c.* L. virgata, *Nutt.! in jour. acad. Philad.* 7. *p.* 72, *& in trans. Amer. Phil. soc.* (*n. ser.*) 7. *p.* 284 (inflorescence compound).

δ.? heads rather larger, 7–12-flowered, spicate, or racemose, with the pedicels short and erect, or sometimes with the inflorescence compound below; scales of the involucre somewhat narrower and less rounded at the summit, usually ciliate.—L. pilosa, *Pursh, l. c.* (chiefly); *Nutt. l. c.; Ell.! sk.* 2. *p.* 277, "var. dubia" (the inflorescence compound below); *Lindl. bot. reg. t.* 595 ("β. gracilis"); *Lodd. bot. cat. t.* 356; not of *Willd.* (*Ait.*) L. pilosa β. lævicaulis, *DC.! prodr.* 5. *p.* 131. L. spicata γ. racemosa, *DC.! l. c. p.* 130. L. dubia, *Bart. veg. mat. med.* 2. *p.* 222, *t.* 49. "L. turbinata, *Sweet, in Loud. hort. Brit.*" Anonymos ciliatus, *Walt. Car. p.* 197*?*

Pine barrens, often in wet places, New Jersey! (var. δ.?) to Alabama! and Florida! common. Aug.–Oct.—Stem 1–4 feet high. Heads as large or larger than in L. spicata, in var. α. & γ. smaller.—Our chief doubts respecting the plants here brought together, relate to var. δ.?, which is very properly called L. dubia by Barton, and which varies between this species and L. spicata, while it presents no characters that we can seize upon to distinguish it as a separate species. The chief distinctions between this species and L. spicata consist in the usually larger, fewer, and more scattered heads; the more regularly imbricated scales of the obconical or obovate involucre, diminishing successively to the outermost, which are very short; the more hairy and shorter achenia, &c. We are by no means certain that we have correctly referred this species to the L. graminifolia of Willdenow, which appears to have been derived from Muhlenberg; in whose herbarium several species are mingled under this name. Our remarks upon the inflorescence of the preceding, apply equally to the present species; and it may also be remarked, that the heads of the compound portion of the inflorescence are frequently smaller and fewer-flowered than the others. We have an interesting variety, or state, sent from Middle Florida by Dr. Chapman; a plant at least six feet high, the inflorescence of which exceeds three feet in length, consisting of a dense virgate raceme (more than 2 feet long) of crowded heads, on spreading or recurved pedicels not larger than the heads themselves, which at the apex are as large as is usual in this species, but very gradually diminish in size towards the base: below the inflorescence is compound, consisting of numerous filiform branches, 2–4 inches long; bearing several mostly sessile heads, which are seldom more than half the size of those at the summit of the raceme.—In a single cultivated specimen of the paniculate state of this species, Mr. Nuttall (*Trans. Amer. phil. soc. l. c.*) remarked chaffy scales intermixed among the flowers. This accidental occurrence, however, will hardly be thought to overthrow a genus so well marked by habit as Carphephorus proves to be.

11. *L. spicata* (Willd.): glabrous, or rarely pubescent; stem strict, very leafy; leaves linear, acute; often ciliate towards the base; the upper ones very short, often subulate; the lowermost elongated, 3–5-nerved; heads about 8- (sometimes 10–13-) flowered, sessile, aggregated in a dense elongated spike; involucre cylindrical or cylindrical-campanulate, obtuse at the base; the scales (15–20) appressed, resinous-punctate and with narrow scarious (purplish) margins, obtuse; the inner oblong; the exterior oval or roundish, short; achenia more or less hairy or pubescent, or almost glabrous when mature; pappus densely barbellate.—*Willd.! spec.* 3. *p.* 1636; *Bot. mag. t.* 1411; *Ell. sk.* 2. *p.* 273; *Brit. fl. gard. t.* 49; *Nutt.! gen.* 2. *p.* 131; *Darlingt.! fl. Cest. p.* 448; *DC.! prodr.* 5. *p.* 130. (α. & β.) L. macrostachya, *Michx.! fl.* 2 *p.* 91; *Pursh, l. c.* Serratula spicata, *Linn.! spec.* 2. *p.* 819 (excl. syn. *Gronov.*); *Andr. bot. rep. t.* 401. Suprago spicata, *Gærtn. fr.* 2. *p.* 402, *t.* 167. Cirsium tuberosum, &c. *Dill. Elth. t.* 72, *f.* 83.

β. heads about 5-flowered; plant smaller.—L. resinosa, *Nutt.! gen.* 2. *p.* 131, not of *DC.*

Moist ground, Michigan! and New Jersey! to Florida! and Louisiana! common. Aug.–Oct.—Stem 2–5 feet high. Leaves often hairy on the nerves, spreading or somewhat erect. Spike 5–15 inches long; the heads sessile or nearly so, mostly crowded, about half an inch in length: lower bracts longer, the upper much shorter than the heads. Flowers bright purple. Achenia about the length of the pappus.—The number of flowers in the head is variable. (Mr. G. Watson has discovered, near Philadelphia, a state of this plant with pale pink, or sometimes pure white flowers.)—*Button-Snake-root.*

12. *L. pycnostachya:* hirsute or nearly glabrous; stem stout, strict, very leafy; leaves strict, rigid, closely sessile, and partly clasping at the base; the radical and lower ones elongated, lanceolate, obtuse, 5–7-nerved; the upper short and much crowded, narrowly linear, acute; spike elongated, thick and dense, somewhat leafy below; the heads closely sessile, about 5-flowered; involucre cylindrical; the scales (14–16) oblong or lanceolate, usually acute, with scarious and colored margins, scarcely punctate, rigid, appressed, squarrose at the summit; achenia pubescent; pappus densely barbellate.—*Michx.! fl.* 2. *p.* 91; *Pursh, fl.* 2. *p.* 507 (excl. syn. *Dill. & Walt.?*); *DC. l. c.*

α. stem densely hirsute; leaves more or less hairy; scales of the involucre strongly ciliate, often glandular.

β. stem, leaves, and involucre nearly glabrous.—L. brachystachya, *Nutt.! in jour. acad. Philad.* 7. *p.* 72.

Prairies of Illinois! Missouri! Arkansas! Louisiana! & Texas! (not extending eastward beyond the Alleghany Mountains.) Aug.–Oct.—Stem 3–5 feet high, striate, stout. Spike very dense, cylindrical, and 12–18 inches long, or often short and somewhat clavate, an inch or more in diameter when fully developed; sometimes (in starved specimens of both varieties) slender and looser. Heads equalling or exceeding those of L. spicata in length, but narrower.—A well-marked species, resembling some forms of L. spicata, but readily distinguished by its squarrose involucre. The upper leaves are usually very short, bract-like, subulate, and somewhat appressed.

13. *L. pilosa* (Willd.): more or less pubescent with long scattered hairs; stem stout; leaves linear or linear-lanceolate, elongated, hairy; heads in a loose simple raceme, 10–15-flowered; scales of the turbinate or campanulate involucre glabrous, not punctate, with slight scarious margins; the exterior narrowly oblong, short, very obtuse; the innermost linear; achenia pubescent, nearly as long as the densely barbellate (almost plumose) pappus.—*Willd. spec.* 3. *p.* 1636; scarcely of any succeeding author. Serratula pilosa, *Ait.! Kew.* (*ed.* 1) 3. *p.* 138.

"North America: introduced [into the Kew garden] 1783, by Mr. Wm. Young." *Hort. Kew. l. c.* On Seven-mile Mountain (in the Alleghanies), Virginia, *Mr. Read!* (in *herb. Acad. Philad.*)—Plant nearly as stout as L. scariosa. Heads somewhat scattered, 8–10 lines long, on pedicels which vary in length from 1–3 inches, or are sometimes shorter than the head. Interior scales of the involucre narrow, rather acute, about half an inch long. Achenia and pappus nearly equal in size to L. scariosa.—Our description is drawn from our own memoranda upon an authentic specimen in the Banksian herbarium, and from fuller notes kindly communicated by Mr. Bennett; also from a plant collected in the mountains of Virginia by Mr. Read, the only native specimen we have met with, which accords so well with the original plant as to leave no reasonable doubt of their identity. It has long since disappeared from the English gardens; and being probably a very rare or local species, the name and insufficient character of the Hortus Kewensis have been generally assigned to a very different plant. The character of Pursh's L. pilosa is not inapplicable to the true species; but the habitat he gives, the size of the heads, &c. do not accord. That of De Candolle is chiefly derived from the detailed description of Elliott, which is entirely drawn from a specimen of the New Jersey plant, as is proved by his herbarium. The L. pilosa *β.* lævicaulis, *DC.* is identical with L. spicata *γ.* racemosa of the same author.

14. *L. scariosa* (Willd.): stem stout, more or less pubescent; leaves lanceolate, pubescent or glabrous, obscurely if at all punctate with impressed dots; the radical and lower ones usually large, oval, oblong-lanceolate, or obovate-oblong, somewhat veiny, tapering into a petiole; heads (few or numerous) racemose or spicate, subglobose, 20–40-flowered; scales of the involucre very numerous, obovate or spatulate, very obtuse, often punctate, with more or less ciliate scarious often denticulate and colored margins; the lower ones sometimes a little spreading or squarrose; the lowest bracteolate and often acute; achenia hairy or villous, about the length of the plumose-barbellate pappus.—*Willd.! spec.* 3. *p.* 1635; *Ell.! sk.* 2. *p.* 281; *Bot. mag. t.* 1709; *Bot. reg. t.* 590; *Brit. fl. gard. t.* 87; *Bigel. fl. Bost. ed.* 2. *p.* 293; *Hook.! fl. Bor.-Am.* 1. *p.* 306. L. squarrulosa, aspera, & spheroidea, *Michx.! fl.* 2. *p.* 92. L. scariosa & spheroidea, *DC.! prodr.* 5. *p.* 129 *&* 130. L. borealis, "*Paxton, mag.* 5. *t.* 27." L. heterophylla, *Nutt.! gen.* 2. *p.* 131, not of *R. Br.?* Serratula scariosa, *Linn.! spec.* 2. *p.* 818. Vernonia scariosa, *Poir.*

Dry, usually sandy soil, from the Saskatchawan and Upper Canada! to Florida! Louisiana! & Texas! Aug.–Oct.—Stem 1–5 feet high. Heads often an inch in diameter. Flowers bright purple, or rarely pure white!—Varies with the stem nearly glabrous, or sometimes almost tomentose at the summit; the leaves smooth and glabrous, very scabrous (L. aspera, *Michx.*), or pubescent; the heads from 3–10 or more, when they are usually somewhat distant and distinctly pedicelled (the pedicels shorter or sometimes longer than the heads,) to 30 or 50, when they usually form a dense spike. But the forms are so numerous and diversified that marked varieties cannot be characterized. It is mostly a pretty large and stout plant; but is sometimes slender, 12–18 inches high, with smaller heads, and small linear-lanceolate cauline leaves; when it is frequently called L. heterophylla.

15. *L. heterophylla* (R. Brown): leaves lanceolate, smooth and glabrous; the upper ones linear-lanceolate and much smaller; heads spicate, on very short peduncles; scales of the involucre lanceolate, squarrose, naked.—*R. Br. in Ait. Kew.* (*ed.* 2) 4. *p.* 503.

"Native of N. America: cult. 1790, by Mr. William Malcolm. *Fl.* July and August," *R. Br.* "In S. Carolina and Georgia, *Fraser*, *Bartram*," *Pursh.*—To the original character of this species, we have only to add the following notes upon the specimen preserved in the Banksian herbarium, obligingly communicated by Mr. Bennett: "Heads about 10, forming a compact spike of little more than two inches in length, apparently 15–16-flowered; in size and shape they appear to resemble those of L. scariosa; but the scales are long, pointed, and more decidedly squarrose." Apparently the species has not been subsequently met with in this country; but we have often seen depauperate forms of L. scariosa with this name, yet never with pointed scales. Pursh's reference to *Willd. enum.* is a mistake, as Willdenow has no such species.

16. *L. pauciflora* (Pursh): stem simple, glabrous; leaves linear; panicle virgate, leafy; the branches short, bearing few subsessile secund 3–5-flowered heads; scales of the involucre erect, lanceolate, acute, glabrous. *Pursh, fl.* 2. *p.* 510.

In Georgia, *Bartram*, (*herb. Banks*). Flowers small, the size of No. 4. [which is L. heterophylla.] *Pursh.*—We have translated the character of Pursh, merely changing the name 'calyx' to involucre, &c. This still very obscure species evidently does not belong to the same division with L. paniculata &c., where Pursh places it; for, according to Mr. Bennett's remarks upon the specimen, "the primary branches of the inflorescence (which is 7 or 8 inches long,) are not corymbose but simple, slender, from an inch and a half to two inches in length, suberect, and each bearing 3 to 4 subsessile secund (obconic or subcylindric) capitula: the outer scales of the involucre are less than half the length of the innermost; their shape and the number of flowers in each are accurately noted by Pursh."

§ 2. *Suffruticose: branches and heads corymbose: leaves obovate, puncticulate: scales of the few-flowered involucre few, imbricated: lobes of the corolla lanceolate: pappus unequal, barbellate.*—Leptoclinium, Nutt.

17. *L. fruticosa* (Nutt.): glabrous; branches naked above; leaves spatulate-obovate, nerveless, entire; heads about 5-flowered; involucre cylindrical-campanulate, much shorter than the pappus; the scales (12–14) lanceolate, acute, or acuminate, sprinkled with resinous globules; achenia villous-pubescent.—*Nutt.! in Sill. jour.* 5. *p.* 299, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 285.

East Florida, *Mr. Ware!*—Leaves scattered, (the lower opposite, the upper alternate, *Nutt.*) about an inch long, similar in shape to those of the common Purslane. Scales of the involucre imbricated in about 3 series; the exterior shorter and more acuminate; the innermost a little longer than the achenia, which are nearly 3 lines in length. Corolla purple. Pappus longer than the achenia, of numerous rather strongly barbellate bristles, some of which are much weaker and shorter than the others.—The achenia and pappus exactly agree with those of L. scariosa, and are about the same size: the receptacle is the same as in other few-flowered species.

§ 3. *Root a short rhizoma or caudex: leaves dilated, obovate, spatulate, or lanceolate, somewhat tripli-nerved or veined, not punctate with impressed dots: heads corymbose or paniculate-cymose, small, few-flowered: scales of the involucre few and slightly imbricated: corolla scarcely dilated above; the lobes short, ovate: pappus minutely barbellate.*—Trilisa, Cass., DC. (excl. spec.)

18. *L. odoratissima* (Willd.): glabrous; leaves somewhat glaucous, obscurely veined; the radical ones obovate-spatulate, tapering at the base, often slightly and obtusely toothed; the cauline oblong, clasping at the base; cyme corymbose-paniculate; the heads numerous, pedicellate, 7–8-flowered; scales of the involucre spatulate-oblong, glandular; achenia scarcely pubescent.—*Willd.! spec.* 3. *p.* 1637; *Michx.! fl.* 2. *p.* 93; *Pursh. fl.* 2. *p.* 510; *Nutt.! gen.* 2. *p.* 132; *Andr. bot. rep. t.* 633; *Ell. sk.* 2. *p.* 283; *DC.! prodr.* 5. *p.* 131; *Don, in Brit. fl. gard.* (*ser.* 2) *t.* 184. Anonymos odoratissimus, *Walt. Car. p.* 198. Trilisa odoratissima, *Cass. dict.* 55. *p.* 310.

Pine barrens, Virginia (*Nuttall*) to Florida! Alabama! and Louisiana! Sept.–Oct.—Stem 2–4 feet high, corymbose at the summit. Leaves thick, tripli-nerved, or with several veins proceeding from the midrib; the radical ones large; the upper small and scattered. Flowers bright purple. Achenia glandular.—The leaves when bruised exhale the odor of Vanilla, which in a dry state they retain for many years; whence the popular name, *Vanilla-plant.*

19. *L. paniculata* (Willd.): stem clothed with viscid hairs; leaves 3–5-nerved, mostly glabrous; the radical ones spatulate-lanceolate, tapering into a margined petiole; the cauline very small and numerous, lanceolate or ovate-lanceolate, sessile, viscidly pubescent when young; corymbs small, numerous, aggregated into a dense oblong panicle; heads 4–10- (commonly 5-) flowered; scales of the involucre lanceolate or linear-oblong, viscid;

achenia minutely pubescent.—*Willd.! spec.* 3. *p.* 1637; *Michx.! l. c.; Pursh, l. c.; Nutt.! gen.* 2. *p.* 132; *Ell. sk.* 2. *p.* 283; *DC! l. c.* Anonymos paniculatus, *Walt.! Car. p.* 198.

Moist pine barrens, Virginia to Florida! common. Sept.–Oct.—Stem 1–2 feet high, virgate, purplish, somewhat villous or hirsute with glutinous hairs. Cauline leaves very small, appressed, almost imbricated. Heads as large as in the preceding species. Corolla purple, sometimes almost white. The scales of the involucre vary from 6 to 16, and the flowers from 4 to 10.

L. flexuosa of D. Thomas, in *Sill. jour.* 27. *p.* 338 (1839), is either L. cylindracea or a reduced L. squarrosa; it is impossible to determine which from the imperfect description and figure.

12. CLAVIGERA. *DC. prodr.* 5. *p.* 127.

Heads 5–20-flowered. Scales of the involucre imbricated in several series, striate; the exterior very short; the innermost elongated, linear. Receptacle narrow, naked. Corolla tubular, dilated at the base, not expanded above, 5-toothed; the teeth very short, glandular externally. Style with a villous bulb at the base; the branches terete or subclavate, mostly glabrous, included or partly exserted. Achenia somewhat cylindrical, striate (mostly 10-striate), nearly glabrous, sessile. Pappus a single series of plumose-barbellate bristles.—Somewhat shrubby branched (Mexican & Texan) plants. Leaves alternate, 1-nerved or tripli-nerved, linear or oblong, entire or toothed, sometimes dotted with resinous globules, or punctate. Heads in a corymbose or spicate panicle. Flowers whitish.

"A genus intermediate between Kuhnia and Liatris [but much nearer the former], dedicated, on account of the species being all natives of Mexico, to Franc. Xav. Clavigero, who wrote upon the natural as well as the civil history of Mexico." *DC.*—On the authority of Hænke's herbarium, De Candolle gives Mulgrave Sound as one of the localities of C. scoparia; but this is probably a mistake; and much confusion is said to exist respecting the localities of Hænke's plants.

1. *C. dentata* (DC.): pubescent, cinereous, shrubby; leaves oval-oblong, toothed, here and there somewhat lobed at the apex; branchlets leafy, bearing one or few heads disposed in a narrow panicle; heads 12-flowered; scales of the involucre linear-lanceolate, acuminate, ciliate, somewhat scarious at the apex, more or less striate. *DC. l. c.*

Texas, in the eastern districts (Cammancheries), and about Bexar, *Berlandier*, ex *DC.*—This species perhaps hardly comes within the prescribed limits of our Flora. We introduce it for comparison with the following, apparently different, species.

2. *C. Riddellii:* shrubby; the branches cinereous and minutely pubescent: leaves oblong-lanceolate, obscurely punctate; the lower ones tripli-nerved, reticulate-veined beneath, minutely pubescent, unequally serrate; those of the branches small, crenately toothed from the middle to the apex; heads 15–20-flowered, disposed in a leafy spike or thyrsus terminating the virgate branches; scales of the involucre pubescent and glandular, striate, obtuse, seldom mucronate; the exterior ovate; the inner lanceolate-linear, slightly scarious at the apex.

Interior of Texas, *Dr. Riddell!*—A much branched shrub, 4–6 feet high. Lower leaves slightly petioled. Spike or raceme nearly simple, dense, virgate; the heads scarcely exceeding the leaves from the axils of which they arise, the lower ones flowering earliest. Branches of the style partly exserted, clavate. Achenia about 10-striate.

13. KUHNIA. *Linn. spec. ed.* 2. *appx. p.* 1662; *Vent. Cels. t.* 91.

Kuhnia § Strigia, *DC.*—Critonia, *Gærtn.*, not of *R. Br.*

Heads 10–25-flowered. Scales of the involucre lanceolate, rather loosely imbricated in two or three series; the exterior shorter, acute or acuminate. Receptacle naked. Corolla tubular, somewhat dilated at the base, not expanded above, 5-toothed; the teeth short, obtuse, glandular externally. Style with a villous bulb at the base; the branches at length exserted, slightly clavate and somewhat flattened at the summit, glabrous. (Anthers sometimes abortive or unconnected?) Achenia nearly cylindrical, many-striate, sessile. Pappus a single series of strongly plumose bristles.—Perennial herbs or suffrutescent plants, with alternate or somewhat opposite 1-nerved or tripli-nerved lanceolate leaves, sprinkled with resinous dots beneath. Heads paniculate-corymbose. Flowers white or purple.

We have drawn the above character from the North American species alone, to which, with probably K. rosmarinifolia of Cuba (the section Strigia, *DC.*) the genus should doubtless be restricted: the species with pentagonal estriate achenia seem to be closely allied to Eupatorium, while Kuhnia proper is more near to Clavigera.—Kuhnia glutinosa of Elliott is placed by De Candolle in his section Leiogonia, and is referred by Hooker to Eupatorium altissimum, in both cases on the authority of specimens communicated by the author himself, who had inadvertently sent under that name the Eupatorium altissimum, a very different plant from the K. glutinosa of his herbarium (also long since sent to his correspondents in this country), and by no means agreeing with his published description, in which the pappus is said to be "beautifully feathered."—Kuhnia Arabica, *Hochst. & Steud.! pl. Arab. un. itin.; DC.! prodr.* 7. *p.* 267, is a species of Pegolettia, as Dr. Arnott first intimated to us.—Nothites, *Cass.* (of which we know a single species) is nearer Kuhnia than Mikania, but a distinct genus.

1. *K. eupatorioides* (Linn.): stem herbaceous; leaves, as well as the scales of the involucre, thickly sprinkled beneath with shining resinous dots, lanceolate; the cauline ones mostly irregularly serrate; those of the branches narrow and usually entire; heads in paniculate corymbs; flowers white or yellowish-white.—*Linn. l. c.* (excl. syn. *Pluk.*); *Linn. f. decad.* 2. *p.* 21, *t.* 11; *Darlingt.! fl. Cest. p.* 449. K. eupatorioides & K. Critonia, *Willd. spec.* 3. *p.* 1773. K. eupatorioides, dasypia, glutinosa, elliptica, tuberosa, fulva, (media, glabra,) & pubescens, *Raf.* Critonia Kuhnia, *Gærtn. fr.* 2. *p.* 411, *t.* 174, *f.* 7; *Michx.! fl.* 2. *p.* 101.

β. corymbulosa: lower surface of the leaves, and the branches, cinereous-pubescent; lower leaves ovate-lanceolate, irregularly serrate or sometimes laciniate-toothed; corymbs rather short and dense.—K. eupatorioides, *Ell. sk.* 2. *p.* 291; *DC. prodr.* 5. *p.* 126. K. glutinosa, *Ell.! l. c.*, not of *DC. prodr.!* K. suaveolens, *Fresenius, ind. sem. hort. Franc.* 1838.

γ. gracilis: leaves scarcely pubescent; the lower cauline ones lanceolate and more or less serrate; the others linear and mostly entire; corymbs loose, paniculate.—K. paniculata, *Cass. dict.* 24. *p.* 516; *DC.! l. c.* K. Critonia, *Ell. l. c.*, *&c.*

Dry soil, New Jersey! and Pennsylvania! to Florida! Alabama! Louisiana! and Texas! Sept.–Oct.—Lower leaves frequently opposite. Achenia pubescent when young, nearly glabrous when mature. Pappus white or tawny.—The K. eupatorioides of Linnæus, and the Critonia Kuhnia of Gærtner were clearly founded on the same plant, and that the more common form in New Jersey and Pennsylvania, which is rather the K. Critonia of authors than K. eupatorioides; so that some changes in nomenclature would be necessary if more than one species were admitted. But, considerable as is the difference between the extremes, we have a great variety of specimens forming such complete transitions that we are unable even to characterize a series of varieties. The involucre, corolla, achenia, &c. are precisely the same in all. We have, therefore, taken the more common northern plant as the type of the species, and have designated the extreme forms as varieties.

14. BULBOSTYLIS. *DC. prodr.* 5. *p.* 138.

Heads 10–25-flowered. Scales of the oblong or cylindrical-campanulate involucre rather loosely imbricated in about 3 series, striate; the exterior short, the inner lanceolate or linear. Receptacle narrow, naked. Corolla tubular, slender, somewhat dilated at the base, contracted at the summit, with 5 extremely short externally glandular teeth. Style with a commonly villous bulb at the base, included. Achenia nearly terete, or obscurely 5-angled, about 10-striate. Pappus of numerous capillary scabrous bristles, longer than the corolla.—Suffruticose (chiefly Mexican) plants, with terete branches. Leaves opposite or alternate, ovate or lanceolate, petioled, serrate, often dotted with resinous globules. Heads in thyrsoid or spicate leafy panicles. Flowers mostly white or ochroleucous.

Perhaps not sufficiently distinct from Brickellia; which again is distinguished from Eupatorium chiefly by its striate achenia.

1. *B. Californica:* stem and branches velvety-puberulent; leaves ovate, on short petioles, irregularly serrate-toothed, 3-nerved at the base, nearly glabrous above, dotted with minute glands and puberulent but scarcely reticulated beneath, the upper ones mostly alternate; heads in a spicate thyrsus, about 20-flowered; scales of the involucre obtuse; the exterior very short, appressed; the innermost linear, 1–2-nerved; achenia minutely pubescent.—B. Cavanillesii, *DC.! prodr.* 5. *p.* 138, partly (the Californian plant); *Hook. & Arn.! bot. Beechey, suppl. p.* 350.
California, *Douglas!*—Differs from the Mexican plant (*herb. DC.!*) as well in the leaves, which have not the upper surface scabrous, nor the lower reticulated, as in the obtuse scales of the involucre.

2. *B. microphylla* (Nutt.): much branched, viscidly pubescent and glandular; leaves alternate, ovate, petioled, sparingly toothed, tripli-nerved, equally pubescent and viscid on both sides; those of the branchlets very small, nearly sessile; heads about 15-flowered; exterior scales of the involucre with squarrose foliaceous tips; the interior erect, linear, 2–3-nerved, mucronulate.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 287.
Oregon, on the Walla-wallah, *Nuttall!*—A low suffruticose plant; the leaves of the numerous branchlets only 2 or 3 lines long, rather thick, resembling those of some Asters. Heads small, scattered. Achenia not seen.

15. BRICKELLIA. *Ell. sk.* 2. *p.* 290.

Heads 30–50-flowered. Scales of the campanulate involucre imbricated, lanceolate or linear, striate; the exterior shorter. Receptacle naked, flat. Corolla tubular, slightly expanded towards the summit; the teeth short, obtuse, scarcely glandular externally. Style with a villous bulb at the base; the branches often much exserted, somewhat clavate, glabrous. Achenia nearly cylindrical, about 10-striate. Pappus a single series of slender scabrous or minutely barbellate-serrulate bristles.—Perennial herbs (natives of the Southern United States and Oregon), sparingly branched; with opposite or alternate tripli-nerved leaves, and rather large corymbose heads. Flowers pale purple.

§ 1. *Leaves mostly opposite, cordate, crenate, petioled, 3-nerved from the base, veiny: involucre rather shorter than the flowers.*

1. *B. cordifolia* (Ell. l. c.): stem paniculate-corymbose at the summit; leaves all opposite, somewhat triangular-cordate, acuminate, minutely pubescent and thickly dotted with resinous globules beneath, crenate-toothed; corymb loose, the branches bearing 1–3 pedunculate heads; bracts setaceous; scales of the involucre rather rigid; the outermost subulate, loose or bracteolate, somewhat shorter than the obtuse oblong-linear imbricated interior ones; branches of the style much exserted; achenia nearly glabrous; pappus (purplish) persistent.—Eupatorium Brickellia, *DC. prodr.* 5. *p.* 182.
Hill-sides, western districts of Georgia, *Elliott.* Middle Florida, *Dr. Chapman!* Aug.–Sept.—Stem about 3 feet high, terete. Leaves about 3 inches long; the uppermost merely truncate at the base. Heads half an inch long, 40–50-flowered. Style with a depressed villous bulb. Achenia when young minutely hairy towards the summit.

2. *B. grandiflora* (Nutt.): stem paniculate at the summit; leaves cordate-triangular, acuminate, pubescent or nearly glabrous, dotted with resinous globules beneath, coarsely or incisely dentate-serrate; the lower mostly opposite, the others alternate; heads subsessile and glomerate (3–5 together) on the simple branches of the panicle; scales of the involucre imbricated in several series; the inner ones linear-oblong, rather acute; the exterior short, ovate, appressed, produced into a subulate spreading appendage; branches of the style slightly exserted; achenia glabrous when mature; pappus (white) deciduous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 287. Eupatorium? grandiflorum, *Hook. fl. Bor.-Am.* 2. *p.* 26.
Low hills between the north and south branches of Lewis & Clarke's River, Oregon, *Douglas;* and from this region to the Rocky Mountains, *Nuttall!* Upper plains of the Platte? *Dr. James!*—Manifestly allied to the preceding species; the heads about the same size. Flowers white, according to Hooker; but evidently tinged with purple in the specimen of Dr. James.

§ 2. *Leaves all alternate, oblong-lanceolate, small, sessile, not sprinkled with resinous dots, obscurely tripli-nerved, entire: inner scales of the involucre longer than the flowers.*

3. *B. oblongifolia* (Nutt.): slightly viscid-puberulent; leaves numerous, narrowly oblong, mucronulate, tapering to the base, scarcely veined; heads solitary or 2–3 together, terminating the corymbose-paniculate leafy branches; scales of the involucre imbricated in 3 or 4 series; the exterior shorter, lanceolate-oblong, often obtuse; the interior linear, elongated, acute or mucronate; branches of the style scarcely exserted; achenia slender, minutely puberulent.—*Nutt.! l. c.*
Gravel bars of the Oregon and Wahlamet, *Nuttall!*—Leaves about an inch long. Heads 8–10 lines in length. Habit different from the other species. The plant is viscid, and has a heavy odor, according to Nuttall; who states that the flowers are yellowish [ochroleucous?].

16. EUPATORIUM. *Tourn. inst. t.* 259; *Linn.*; *Gærtn. fr. t.* 166; *DC. prodr.* 5. *p.* 141.

Heads 3–100-flowered. Involucre cylindrical or campanulate; the scales imbricated in 2–3 or more series, or sometimes nearly equal in a single series. Receptacle flat, naked. Corolla tubular-infundibuliform or often with a campanulate limb, 5-toothed, frequently dilated at the base. Anthers included. Branches of the style mostly exserted and elongated, cylindraceous or somewhat flattened, obtuse. Achenia 5-angled, without intermediate striæ. Pappus a single series of very slender capillary bristles, scabrous or minutely serrulate.—Perennial herbs or somewhat shrubby plants (the greater portion American), with opposite (sometimes alternate or verticillate) simple or rarely divided leaves. Heads mostly corymbose. Flowers purple, blue, or white. Leaves, involucre, corolla, and achenia often sprinkled with resinous globules; the former rarely impressed-punctate.

§ 1. *Heads cylindrical, 5–60-flowered: scales of the involucre numerous, closely imbricated in several series, appressed, obtuse, strongly striate; the outer ones shortest: leaves opposite or rarely alternate.*

1. *E. ivæfolium* (Linn.): herbaceous; stem terete, somewhat hispid; leaves opposite, narrowly lanceolate, tapering to each end, scarcely petioled, 3-nerved, subserrate, glabrous; corymb trichotomous, loose; heads oblong, pedicellate, 15–20-flowered; scales of the involucre few, erect, striate, obtuse. *DC.*—*Linn. amœn. acad.* 5. *p.* 405, *& spec.* (*ed.* 2.) 2. *p.* 1174; *Swartz, obs. p.* 301; *DC. prodr.* 5. *p.* 146.

β. Ludovicianum: leaves less attenuated at each end, often rather obtuse; the uppermost short and nearly sessile; corymbs more dense.—E. neurolepis, *Torr.! herb.* E. calocephalum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 286. Liatris oppositifolia, *Nutt.! in Sill. jour.* 5. *p.* 299.

Open woods or fields, Louisiana, near New Orleans, *Tainturier! Nuttall! Dr. Ingalls! Dr. Riddell!* Jackson, *Dr. Carpenter!* and Alexandria, Western Louisiana, *Dr. Hale!* July–Nov.—Stem branched, 3–5 feet high. Lower leaves about 2 inches long, broadly lanceolate, rather sparingly serrate; those of the numerous branchlets very short. Corymbs with 6–20 heads, more contracted than in the West Indian plant. Scales of the involucre about 20; the inner ones somewhat dilated and colored (purplish) at the summit. Flowers light purplish-blue.—We have only seen West Indian specimens of E. ivæfolium *β. DC.*; which has more pointed leaves than our plant, but appears scarcely to differ in other respects. This is our only representative of a large and marked group of tropical American species.

§ 2. *Heads cylindrical, 5–10-flowered: scales of the involucre numerous, colored, obtuse, slightly striate, imbricated in several series; the outermost much shortest (style bulbous at the base): herbaceous: leaves large, mostly verticillate: flowers purplish.*

2. *E. purpureum* (Linn.): stem stout, simple, fistular or nearly solid, pubescent or glabrous; leaves (3–6-nately) verticillate or rarely opposite, oblong-ovate or lanceolate, more or less petioled, acuminate, veiny, scabrous or glabrous above, somewhat pubescent beneath and minutely dotted with resin-

ous globules, serrate, the teeth mucronulate; heads in a large compound corymb, 5–9- (rarely 3–12-) flowered; achenia glabrous and more or less glandular.—*Linn.! spec.* (*ed.* 1) 2. *p.* 838; *Hook.! fl. Bor.-Am.* 1. *p.* 304; *Darlingt. fl. Cest. p.* 453. E. trifoliatum, *Linn.! l. c.* E. purpureum, maculatum, verticillatum, ternifolium, & dubium, *DC.! prodr.* 5. *p.* 151.

α. stem tall, somewhat glabrous and glaucous, purple at the nodes (and sometimes throughout); leaves (5–6 in a whorl) large, oblong-ovate, coarsely serrate, somewhat petioled, often rugosely veiny; corymb very large, convex.—E. purpureum, *Linn.! l. c.* (excl. *β.*) *& ed.* 2. *p.* 1173; *Willd.! spec.* 3. *p.* 1759 (partly); *Ell. l. c.? &c.; DC.! l. c.* E. verticillatum, *Willd.! l. c.* (herb. fol. 1, & 2!) E. trifoliatum, *Darlingt.! l. c.*

β. maculatum (Darlingt.! l. c.): stem mostly striate or grooved, pubescent and often glandular or viscid above, punctate with purple linear spots; leaves (mostly ternate or quaternate) ovate, slightly tripli-nerved, petioled; corymb dense, depressed.—E. purpureum, *β. Linn.! l. c. ed.* 1. E. maculatum, *Linn.! amœn.* 4. *p.* 288, *& spec. ed.* 2. *p.* 1174; *Willd.! l. c.; Michx.! fl.* 2. *p.* 99; *Bart. fl. Amer. Sept. t.* 102; *Ell. l. c.; DC.! l. c.* E. punctatum, *Willd.! enum.* 2. *p.* 853; *Pursh, fl.* 2. *p.* 515. E. amœnum, *Pursh! l. c.*—Varies, with the leaves strongly rugose and scabrous-pubescent both sides, or nearly smooth and glabrous; either acute or acuminate at each end (E. maculatum, *Ell. l. c.*); or obtuse at the base, and pubescent and glandular beneath, as also the scales of the involucre (E. ternifolium, *Ell. l. c.; DC. l. c.*); or with the leaves scarcely acuminate, the involucre glabrous and about 3-flowered (E. dubium, *Poir.*, *DC.*); or occasionally with the lower leaves ternate, the upper opposite, the uppermost sometimes even alternate (E. amœnum, *Pursh, l. c.*); and by other forms with a slightly punctate stem, elongated (mostly ternate) ovate-lanceolate leaves, acuminate at both ends and coarsely serrate, (E. trifoliatum, *Linn.*, *Darlingt. l. c.*) approaching the original E. purpureum, so as to be undistinguishable from its more slender states.

γ. angustifolium: stem tall, glabrous and somewhat glaucous, or pubescent at the summit, sparingly punctate with linear spots; leaves (commonly 5 or 6 in a whorl), petioled, evenly and rather finely serrate; the lower ones oblong-lanceolate; the upper linear-lanceolate; corymb compound, paniculate-thyrsoid, loose.—E. lævigatum, *Torr.! cat. pl. New York.*—Varies (in shady places,) with the heads and flowers nearly white, the leaves membranaceous and more deeply serrate, &c.; when it is E. falcatum, *Michx.! fl.* 2. *p.* 99.

Low grounds, thickets, and swamps, Canada! from the Saskatchawan, and throughout the United States! Aug.–Sept.—Stem 3–7 or even 10 feet high. Involucre purplish or whitish; the scales 12–18, obtuse; the exterior very short, closely imbricated, pubescent; the others linear-oblong and linear, scarious, 2–3-nerved, shorter than the flowers. Corolla infundibuliform-tubular; the lobes ovate-lanceolate, short, light purple or flesh-color. Style with a small globose pubescent bulb at the base; the branches very much exserted.—This plant is sometimes employed medicinally, as a tonic.

§ 3. *Heads 3–many-flowered: scales of the somewhat cylindrical or campanulate involucre* 8–15, *more or less imbricated; the exterior shortest: leaves opposite, sometimes verticillate or alternate.* (*Stem herbaceous, flowers white, and the corolla, achenia, &c. more or less dotted with resinous globules in all the North American species.*)

* *Paniculate: heads* 3–5-*flowered: leaves alternate, pinnately lobed.*

3. *E. fœniculaceum* (Willd.): paniculately very much branched; stem

puberulent; leaves alternate, linear-filiform, glabrous; the lower pinnately or bipinnately parted; the upper fascicled, entire; heads very numerous, small, 3–5-flowered, on short pedicels; scales of the involucre 8–10; the exterior very short; the inner mucronulate-acuminate, glabrous, slightly margined; achenia glabrous.—*Willd.! spec.* 3. *p.* 1750; *Pursh! fl.* 2. *p.* 512; *Ell. sk.* 2. *p.* 294; *DC.! prodr.* 5. *p.* 176. E. fœniculoides, *Walt. Car. p.* 199. Chrysocoma capillacea, *Michx.! fl.* 2. *p.* 101.

β. *glabrum:* stem and branches glabrous; the racemose-spicate divisions of the panicle somewhat fastigiate.—E. leptophyllum, *DC.! l. c.*

γ. *lateriflorum:* slightly pubescent; branchlets of the panicle loose, with rather few and scattered heads, borne towards the base of leafy branches.—E. fœniculaceum β. traganthes, *DC.! l. c.* (at least partly.)

Fields, in damp soil, mostly near the coast, Virginia! and N. Carolina! to Florida! β. Georgia, *Mr. Herbemont!* (in *herb. Duby* & *DC.*) &c. Florida, *Dr. Leavenworth!* γ. Middle Florida, *Dr. Chapman!* Sept.–Oct.—Stem 3–10 feet high; the branches terminated by the elongated compound panicles. Flowers yellowish-white, (sometimes sprinkled with purple, *Ell.*), very small. Corolla tubular-infundibuliform; the teeth very short, minutely glandular externally. Anthers as long as the corolla: the stamens not very short, as described by Elliott. Branches of the style much elongated and exserted, minutely papillose. Achenia angled as in E. coronopifolium (not cylindrical).—The E. fœniculaceum β. of De Candolle seems a cultivated state of our var. γ., which is a somewhat remarkable form; the heads however being only 5-flowered.—*Dog-Fennel.*

4. *E. coronopifolium* (Willd.): paniculately branched; stem pubescent; leaves mostly alternate, pubescent or nearly glabrous, punctate; the lower ones pinnately 3–7-lobed, the lobes linear; the others linear, mostly entire, fascicled or crowded; heads numerous, scarcely pedicelled, 5-flowered; scales of the involucre about 10, lanceolate, mucronulate, slightly pubescent, with scarious margins; the exterior short and imbricated; achenia glabrous.—*Willd.! spec.* 3. *p.* 1750; *Pursh, l. c.*; *Ell. sk.* 2. *p.* 294; *DC.! prodr.* 5. *p.* 176. E. compositifolium, *Walt. Car. p.* 199. Chrysocoma coronopifolia, *Michx.! fl.* 2. *p.* 102.

Dry barren soil, N. Carolina to Florida! Alabama! and Texas! Sept.–Oct.—Stem 3–4 feet high; the branches of the panicle rather short and dense. Flowers about twice the size of those of E. fœniculaceum, white; the corolla, achenia, pappus, &c. similar. Style with a minute bulb at the base.

* * *Corymbose: heads* 5–15- (*rarely more than* 20-) *flowered.*

† Leaves sessile or nearly so, not clasping or connate: heads 5- (rarely 7–9-) flowered.

5. *E. pinnatifidum* (Ell.): pubescent; stem fastigiately corymbose at the summit; leaves laciniate-pinnatifid, with the segments linear and entire or toothed, pubescent beneath, sprinkled with shining resinous dots; the lower ones quaternately verticillate, the others opposite or mostly alternate; heads small, very numerous, 5–9-flowered; scales of the involucre 8–10, linear-oblong or lanceolate, mucronulate, pubescent and sprinkled with resinous dots; achenia sparsely glandular.—*Ell. sk.* 2. *p.* 295; *DC. prodr.* 5. *p.* 176, but not of *p.* 149.

Damp soil in the middle districts of Carolina, *Elliott.* Middle Florida, *Dr. Chapman!* Sandy woods of N. Carolina, *Mr. Curtis!*—Stem 3–4 feet high. Leaves lanceolate, 1–3 inches long, deeply and unequally laciniate-pinnatifid, nearly glabrous above, minutely pubescent and more conspicuously dotted with shining globules beneath; the lower segments elongated and usually toothed or laciniate. Branches of the fastigiate corymb loose;

the heads not larger than in E. coronopifolium. Corolla infundibuliform, attenuate below, and abruptly dilated at the base; the teeth very short, ovate, glandular externally. Pappus as long as the corolla. Achenia dotted with scattered resinous globules.—Our plant appears to be that of Elliott, although we have never seen the lower verticillate leaves, and the heads are mostly 7–9-flowered. The styles also in our specimens are often all included within the corolla at every stage, and with short very obtuse lobes. Two or three flowers of each head, however, often present the branches of the style elongated and much exserted, as described by Elliott. The same thing occurs in several of the succeeding species, and in Kuhnia eupatorioides, where the style is usually included until a late period.

6. *E. hyssopifolium* (Linn.): stem minutely pubescent, simple or branched, loosely corymbose at the summit; leaves opposite or verticillate, and often fascicled in the axils, the uppermost alternate, linear or lanceolate, rather obtuse, tapering or acute at the base, minutely pubescent, punctate on both sides, 3-nerved, the upper ones 1-nerved, entire, the lower ones sparingly toothed or serrate; heads 5-flowered; scales of the involucre 10, shorter than the flowers, very pubescent, glandular; the outer ones short; the others linear-oblong, obtuse, with slightly scarious margins; achenia glabrous and usually glandular.—*Linn.! spec.* 2. *p.* 836 (pl. *Dill. Elth.* & *Pluk.! t.* 88, *f.* 2.); *Willd.! spec.* 3. *p.* 1749; *Ait.! Kew.* (*ed.* 2) 4. *p.* 505. E. linearifolium & E. hyssopifolium (chiefly), *DC.! prodr.* 5. *p.* 177. E. linearifolium, *Walt.! Car. p.* 199; *Michx.! fl.* 2. *p.* 97 (chiefly); *Willd.! l. c.*; *Ell. sk.* 2. *p.* 296?

β. leaves mostly verticillate, very narrowly linear, elongated, entire.

γ. leaves seldom verticillate; the lower ones rather broadly lanceolate, somewhat veined, coarsely serrate-toothed.—E. linearifolium, *Michx.! l. c.* (partly.) E. hyssopifolium, *DC.! l. c.* (partly.)

δ. leaves usually ternately verticillate, lanceolate, rather large and thin, serrate-toothed.—E. Torreyanum, *Short! cat. Kentucky plants, 2nd suppl.*

Dry mostly sterile soil, from the coast of Massachusetts! and New Jersey! to Florida! and Western Louisiana! β. Middle Florida, *Dr. Chapman!* γ. Southern States! δ. "Knobs among the barrens near the Mammoth Cave, Kentucky," *Dr. Short!*—Stem 1–3 feet high, usually very leafy. Leaves commonly 1½–2 inches long, rather thick and rigid; the lateral nerves somewhat anastomozing, approximate to the mid-nerve in the narrower leaves, nearly wanting in the narrowest. Compound corymb rather loose, often fastigiate. Corolla dilated at the base, as in numerous species, cyathiform or campanulate at the summit; the lobes ovate, very short. Style usually much exserted.—The Linnæan species was founded on the narrower-leaved plant (E. linearifolium, *DC.*), in which the lower leaves are always 3-nerved, and often toothed; this passes insensibly into our var. γ., the extreme forms of which appear abundantly different, but Michaux has justly united them. Our two varieties β. & δ. taken by themselves, would never be thought the same species, but we are unable to separate them.

7. *E. leucolepis:* stem mostly simple, puberulent; leaves opposite, divaricate, lanceolate or linear, obtuse, closely sessile, serrate, very scabrous on both sides, punctate, strongly 1-nerved; the lower ones obscurely 3-nerved or somewhat veiny; corymb fastigiate, canescent; heads 5-flowered; scales of the involucre 8–10, lanceolate, acute or acuminate, very pubescent and glandular on the back, white and scarious at the summit, as long as the flowers; achenia minutely glandular.—E. glaucescens β. leucolepis, *DC.! prodr.* 5. *p.* 177. E. linearifolium, *Michx. l. c.* partly (*ex herb.!*); *Pursh! fl.* 2. *p.* 513 (partly); *Nutt.! gen.* 2. *p.* 135. E. hyssopifolium, *Ell. sk.* 2. *p.* 296?

Damp sandy soil, pine barrens of New Jersey! to Georgia! Florida!

Alabama! and Western Louisiana! Aug.–Oct.—Stem 2–3 feet high. Leaves spreading or divaricate, rather rigid, perhaps never verticillate, seldom fascicled in the axils, the uppermost rarely alternate, both surfaces of a pale glaucous hue, the midrib prominent beneath; the lower ones 2 or rarely 3 inches in length, and from one-fourth to nearly half an inch wide, serrate with appressed teeth; the upper narrower and more finely serrate, or sometimes entire. Corolla, &c. nearly as in E. hyssopifolium. Appendages of the anthers short, obtuse. Branches of the style exserted.—This has sometimes been confounded with E. hyssopifolium, but is readily distinguished as well by the leaves as by the very scarious and acute scales of the involucre.

8. *E. cuneifolium* (Willd.): pubescent; stem simple or branching, loosely corymbose at the summit; leaves very short, opposite, or the uppermost frequently alternate, obovate-oblong, spatulate or oblong-lanceolate, acute or attenuate at the base, slightly petioled, tripli-nerved or 3-nerved from the base, pubescent and punctate on both surfaces, mostly obtuse, and with a few obtuse serratures towards the apex; heads 5-flowered, somewhat crowded on the loose tomentose branchlets of the corymb; scales of the involucre 8–10, very pubescent, sprinkled with glands, obtuse; achenia slightly glandular.—*Willd.! spec.* 3. *p.* 1753, not of *DC.!* E. glaucescens, *Ell.! sk.* 2. *p.* 303. E. linearifolium, *Michx.* (partly, *ex herb.!*) E. hyssopifolium, *DC.! prodr.* 5. *p.* 177, partly.

Shady places, S. Carolina! Georgia! Alabama! and Florida! Aug.–Sept.—Stem about 2 feet high, erect or ascending at the base. Leaves about an inch long, of a pale glaucous hue on both sides, very obtuse, the uppermost sometimes acute, entire and cuneiform at the base, usually with 2–4 obtuse teeth on each side towards the summit. Involucre, flowers, pappus, &c. nearly as in E. hyssopifolium.

9. *E. parviflorum* (Ell.): minutely velvety-pubescent, branching; leaves opposite, or the lower sometimes ternate, and the upper frequently alternate (sometimes verticillate, opposite, and alternate on the same specimen), lanceolate or oblong, minutely punctate, tripli-nerved, somewhat reticulate-veined, unequally and acutely serrate, usually entire below the middle, tapering to the base, the lower slightly petioled; corymbs numerous; heads (small) crowded, 5-flowered; scales of the involucre 8–10, in a double series, pubescent and glandular; the exterior very short; the interior linear, obtuse; achenia glabrous or minutely glandular.—*Ell.! sk.* 2. *p.* 299, (not of *Swartz*, which is Critonia parviflora; nor of *Aublet*, which is a Mikania.) E. cuneifolium, *DC.! prodr.* 5. *p.* 177, not of *Willd.!* E. semiserratum, *DC.! l. c.* E. ambiguum, *Hook.! compan. to bot. mag.* 1. *p.* 96. Critonia elliptica, *Raf.! in herb. DC.*, *& herb. Durand.*

β. lancifolium: stem or branches strict, glabrous below, corymbose at the summit; leaves opposite (sometimes ternate), lanceolate, rather rigid, almost glabrous, acute, serrulate above the middle, tripli-nerved or 3-nerved; the nerves sparingly anastomozing.

Damp soil, Virginia! to Georgia! Florida! Alabama! and Western Louisiana! *β.* Louisiana, *Dr. Leavenworth!* Louisiana and Texas, *Drummond!* Aug.–Oct.—Stem 2–3 feet high, usually diffusely branched above. Leaves pale, minutely velvety-pubescent beneath, 2–3 inches long, often an inch wide, varying from scarcely acute to acuminate, sometimes serrate nearly to the base; the texture rather firm. Heads about as large as in E. coronopifolium, crowded. Involucre shorter than the flowers.—In our var. *β.* the leaves are smaller, nearly glabrous, and rather narrowly lanceolate, resembling the upper leaves of E. parviflorum, with which it agrees in other respects. We had considered it a new species, but having observed various intermediate states, we are satisfied that it is a mere variety of E. parviflorum. The E. ambiguum of Hooker is said to have 8–10-flowered involucres; we find only 5 in specimens distributed from Drummond's collection; but two heads may occasionally become confluent, as happens in some other species.

10. *E. altissimum* (Linn.): stem stout, tomentose-pubescent, corymbosely branched at the summit; leaves opposite, nearly sessile, lanceolate, somewhat tapering to each end, conspicuously 3-nerved, pubescent, acutely and rather remotely serrate above the middle; the uppermost often entire, and sometimes alternate; corymbs numerous; heads glomerate, 5-flowered; scales of the involucre about 10, linear-oblong, obtuse, pubescent or tomentose and glandular, imbricated, shorter than the flowers; achenia obscurely angled, somewhat glandular.—*Linn.! spec.* 2. *p.* 837; *Jacq. hort. Vindob. t.* 164; *Ait.! Kew.* (*ed.* 1) 3. *p.* 159; *Willd.! spec.* 3. *p.* 1754; *Michx.! fl.* 2. *p.* 97; *Pursh! fl.* 2. *p.* 514; *DC.! prodr.* 5. *p.* 177. E. rupestre & E. Floridanum, *Raf.!* Kuhnia glutinosa, *DC.! prodr.* 5. *p.* 127 (spec. *Ell.!*), not of *Ell.! sk.*

Woods and barren soil, Pennsylvania, Ohio! and throughout the Western States! and the western portion of the Southern States! "Florida," *Rafinesque!* Sept.–Oct.—Stem 3–7 feet high. Leaves 3–4 inches long, resembling some species of Solidago, minutely dotted, pubescent or sometimes almost tomentose. Heads rather large. Lobes of the corolla ovate-lanceolate. Style slightly enlarged and pubescent at the base; the branches elongated and thickened. Pappus somewhat remotely scabrous-serrulate.

11. *E. album* (Linn.): stem pubescent, corymbose at the summit; leaves opposite, sessile, broadly lanceolate, coarsely serrate-toothed, veiny, punctate, more or less pubescent and scabrous; branches of the corymb fastigiate, erect; heads 5-flowered, glomerate; scales of the involucre 10–14, closely imbricated, narrowly lanceolate, acuminate, rigid, white and scarious above, mostly longer than the flowers; the exterior usually pubescent and at length dotted with dark resinous globules; achenia glandular.—*Linn.! mant. p.* 111; *Walt. Car. p.* 199; *Willd.! spec.* 3. *p.* 1752; *Ell. sk.* 2. *p.* 296; *DC.! prodr.* 5. *p.* 178. E. glandulosum, *Michx.! fl.* 2. *p.* 98.

Sandy and barren fields, Pennsylvania and New Jersey! to Florida! and Louisiana! Aug.–Oct.—Stem about 2 feet high, varying, as also the leaves, from minutely pubescent to hirsute-villous. Leaves either narrowly or very broadly lanceolate, often very deeply serrate; the veins reticulated beneath. Involucre, corolla, and achenia, when old, copiously sprinkled with resinous globules; in which state it is the E. glandulosum, *Michx.* Lobes of the corolla ovate-lanceolate. Style more commonly included, but sometimes manifestly exserted. Pappus densely barbellate-serrulate.

12. *E. teucrifolium* (Willd.): stem roughish-pubescent, corymbose at the summit; leaves opposite (the uppermost very frequently alternate), sessile, ovate-oblong and ovate-lanceolate, obtuse or truncate at the base, slightly tripli-nerved, veiny, somewhat pubescent and scabrous, obscurely punctate, coarsely serrate-toothed particularly towards the base; the uppermost nearly entire; branches of the corymb few, often alternate; heads glomerate, 5-flowered; scales of the involucre 10, pubescent, oblong-lanceolate, scarcely acute; the interior at length shorter than the flowers; achenia glandular.—*Willd.! spec.* 3. *p.* 1753, *& hort. Berol. t.* 32; *Pursh, fl.* 2. *p.* 513; *DC.! prodr.* 5. *p.* 178. E. pilosum, *Walt. Car. p.* 199? E. verbenæfolium, *Michx.! fl.* 2. *p.* 98; *Ell. sk.* 2. *p.* 301; *Bigel. fl. Bost. ed.* 2. *p.* 296; *Darlingt.! fl. Cest. p.* 450. E. lanceolatum, *Muhl.! in Willd. l. c.* (*herb. Willd. fol.* 2! not *fol.* 1.) *& in herb. Ell.!* E. pubescens, *Bigel.! l. c.*, not of *Muhl. & Willd.*

Borders of swamps and thickets, Massachusetts! New Jersey! and Pennsylvania! to Alabama! and Louisiana! Aug.–Sept.—Stem 2–3 feet high, rather slender. Leaves 2–4 inches long, variable as to the serratures, which are often very coarse and irregular, sometimes even and more numerous; the upper leaves small, usually lanceolate or deltoid-lanceolate, tapering from the base to the apex, but usually rather obtuse, often entire, except a few coarse teeth near the base, occasionally deeply incised. Corymbs small and dense, often somewhat paniculate. Scales of the involucre with scarious margins, little longer than the mature achenia.—The specific name of Willdenow and that of Michaux were published during the same year (1803).

13. *E. rotundifolium* (Linn.): stem densely pubescent, corymbose at the summit; leaves opposite, roundish-ovate, mostly obtuse, truncate or somewhat cordate at the base, sessile, tripli-nerved, veiny, scabrous and pubescent, pale or somewhat hoary and glandular beneath, deeply crenate-toothed; corymb fastigiate; heads 5-flowered; scales of the involucre 8–10, very pubescent, glandular; the exterior very short; the interior linear-lanceolate, abruptly acute or acuminate, scarcely shorter than the flowers; achenia glandular.—*Linn.! spec.* 2. *p.* 837; *Willd.! spec.* 3. *p.* 1754; *Michx.! fl.* 2. *p.* 98 (partly); *Ell. sk.* 2. *p.* 300; *Hook. fl. Bor.-Am.* 1. *p.* 304; *DC.! prodr.* 5. *p.* 178. E. Marubium, *Walt. Car. p.* 199, ex *Ell.* Eupatoria valerianoides Virginiensis, &c. *Pluk.! alm. p.* 141, *t.* 88, *f.* 4.

Dry sterile soil, particularly in pine barrens, (Canada, *Pursh, Mr. Goldie*,) New Jersey! to Florida! Louisiana! and Texas! July–Sept.—Stem 2–3 feet high, slender. Leaves 1–2 inches long. Pappus a little longer than the corolla.—*Wild Hore-hound.*

14. *E. pubescens* (Muhl.): stem very pubescent or somewhat hirsute, corymbosely branched at the summit; leaves opposite, ovate, mostly acute, slightly truncate at the base, sessile, somewhat tripli-nerved, veiny, more or less pubescent, slightly scabrous, obscurely glandular-punctate, dentate-serrate; corymb fastigiate; heads 7–8-flowered; scales of the involucre 10–14, pubescent and glandular; the exterior very short; the interior lanceolate, acute, rather shorter than the flowers; achenia glandular.—*Muhl. in Willd.! spec.* 3. *p.* 1755; *Willd.! enum.* 2. *p.* 852; *Pursh, fl.* 2. *p.* 514 (excl. syn. *Michx.*); *Ell. sk.* 2. *p.* 301; *DC. prodr.* 5. *p.* 178? E. scabridum, *Ell. l. c. p.* 299? E. ovatum, *Bigel. fl. Bost. ed.* 2. *p.* 296. E. rotundifolium β.? ovatum, *Torr.! in DC. l. c.* E. obovatum, *Raf. in med. repos.* (*hex.* 2) 5. *p.* 359.

Massachusetts! New Jersey! Pennsylvania, and probably in the Southern States, in similar situations with the preceding. Aug.–Sept.—Stem 2–4 feet high, usually a stouter and more branching plant than E. rotundifolium. Leaves broadly ovate or ovate-oblong, 2–3 inches long and about 1½ wide near the base, rather obtusely and coarsely serrate; the teeth (as in the preceding) either simple and equal, or occasionally unequal, thus becoming somewhat doubly serrate. Scales of the involucre with scarious summits. Corolla, pappus, &c. as in E. rotundifolium, which it sometimes approaches perhaps too closely; but the heads appear to be uniformly more than 5-flowered.—The specimens in Willdenow's herbarium (particularly fol. 2.) certainly belong to this species; but that author states the heads to be 5-flowered.

† † Leaves closely sessile or partly clasping at the base, or sometimes connate: heads 10–20- (rarely 5-) flowered.

15. *E. sessilifolium* (Linn.): glabrous; stem corymbosely branched above; leaves opposite, closely sessile or partly clasping, distinct, rounded at the base, lanceolate or ovate-lanceolate, tapering from near the base to the acuminate apex, sharply serrate, veiny, obscurely punctate and paler beneath; corymb compound, pubescent; heads 5-flowered; scales of the involucre 10, imbricated somewhat in a triple series, oval or oblong, obtuse, canescently

pubescent, glandular; achenia minutely glandular.—*Linn.! spec.* 2. *p.* 837; *Willd.! spec.* 2. *p.* 1751; *Michx.! fl.* 2. *p.* 98; *Pursh! fl.* 2. *p.* 513; *Ell. l. c.; Bigel. fl. Bost. ed.* 2. *p.* 295; *Darlingt. fl. Cest. p.* 451; *DC.! prodr.* 5. *p.* 151. E. truncatum, *Ell. sk.* 2. *p.* 298.

Borders of thickets, Massachusetts! New York! Pennsylvania! and along the Alleghany Mountains to Georgia! and Alabama! Aug.-Sept.—Stem 2-4 feet high, much branched above. Leaves often 6 inches long, variable in breadth, and in the teeth (which are either fine or coarse), glabrous. Heads, according to De Candolle, 5-12-flowered, but we have only observed the smaller number. Lobes of the corolla ovate-lanceolate. Style moderately exserted; the base minutely bulbous and villous.

16. *E. perfoliatum* (Linn.): stem stout, very pubescent or villous-hirsute, corymbosely branched above; leaves opposite, connate-perfoliate, divaricate, lanceolate, elongated, tapering gradually from the base to the acuminate apex, obtusely serrate, veiny, the veinlets reticulated beneath, rugose, pubescent, the lower surface usually almost tomentose-pubescent and sprinkled with resinous dots; corymb fastigiate, compound; the heads commonly 10-flowered; scales of the involucre 12-15, very pubescent, glandular, imbricated; the inner ones linear-lanceolate, with scarious tips; achenia glabrous or minutely glandular.—*Linn.! spec.* 2. *p.* 838; *Willd.! spec.* 3. *p.* 1761; *Pursh! l. c.*; *Ell. sk.* 2. *p.* 302; *Bigel.! med. bot.* 1. *p.* 38, *t.* 2, *& fl. Bost. ed.* 2. *p.* 297; *Raf. med. bot. t.* 36; *Darlingt.! fl. Cest. p.* 451; *Hook. fl. Bor.-Am.* 1. *p.* 305; *DC.! prodr.* 5. *p.* 151.

β. leaves glabrous above, pubescent only on the midrib and veins of the lower surface; heads 25-40-flowered!

γ. leaves glabrous above, more or less pubescent beneath; the upper distinct and truncate at the base; the uppermost frequently alternate.—E. truncatum, *Muhl. in Willd.! spec.* 3. *p.* 1751; not of *Ell.*, scarcely of *DC.* E. salviæfolium, *Bot. mag. t.* 2010.

δ. smaller; leaves mostly narrowed at the base, distinct or slightly connate.—E. cuneatum, *Engelmann! mss.*

Swampy grounds, Canada! Upper Missouri! and throughout the United States! abundant. δ. Arkansas, near Little Rock, *Dr. Engelmann!* July-Sept.—Stem 2-4 feet high. Leaves often 6-8 inches long, usually perfectly connate at the base, where they are widest, decussate, rarely ternate and connate in the same manner. Lobes of the corolla ovate, short.—This is the well-known *Boneset* or *Thorough-wort*, so universally employed in popular medicine. Our var. β. may be considered as an accidental state, produced by the confluence of several heads into one, and the scales of the involucre are likewise increased in number. The same thing we suspect sometimes occurs in E. sessilifolium, and perhaps in other species. The E. truncatum of Muhlenberg and Willdenow, according to herbarium of the latter, is nothing more than a form of this species with the upper leaves disjoined and smoother.

18. *E. resinosum* (Torr.): stem velvety-puberulent, simple, or corymbosely branched at the summit; leaves opposite, closely sessile or partly clasping at the base, linear-lanceolate, elongated, spreading or divaricate, attenuate-acuminate, evenly serrate, 1-nerved, pinnately veined, nearly glabrous above, minutely velvety-canescent beneath, both surfaces glandular and somewhat viscid with resinous globules; corymb fastigiate, compound; heads glomerate, 10-15-flowered; scales of the involucre oval, obtuse, imbricated, tomentose-canescent and glandular; achenia minutely roughened with dark resinous globules.—*Torr.! in DC. prodr* 5. *p.* 176.

Swamps and wet soil in the pine barrens of New Jersey, near Quaker Bridge and Wading River! Also "Pennsylvania," *Bartram!* (in *herb. Banks.* under the name of E. canescens.) Aug.-Sept.—Stems terete, growing in tufts, 2–3 feet high. Leaves 4–6 inches long, or often shorter, 4 to 5 lines wide, pale, rather membranaceous, cohering to the paper in the process of drying, on account of the numerous resinous globules intermixed with the close pubescence. Heads rather small, very numerous. Involucre short. Style moderately exserted.—This very distinct and apparently very local species was discovered in the year 1833, by one of the authors of this work, in the pine barrens of New Jersey, where it occurred abundantly, but we have never received it from any other quarter. In the Banksian herbarium, however, there is a specimen from Bartram, said to have been collected in Pennsylvania. In habit it resembles E. leucolepis; but the leaves are rather flaccid, and clothed with a very soft pubescence, and the involucre is different.

† † † Leaves on slender petioles: heads 12–15-flowered.

19. *E. serotinum* (Michx.): stem pulverulent-pubescent, much branched above; leaves opposite, the upper frequently alternate, on slender petioles, ovate-lanceolate, tapering above, acute, tripli-nerved and veiny, pubescent or nearly glabrous, coarsely and sharply serrate; corymbs numerous, compound; heads 12–15-flowered; scales of the involucre 10–12, linear-oblong, with scarious margins, very pubescent, imbricated; achenia glabrous, seldom glandular.—*Michx.! fl.* 2. *p.* 100; *Ell.! sk.* 2. *p.* 304; *DC.! prodr.* 5. *p.* 175.

Damp soil, N. Carolina! to Georgia! and Illinois! to Arkansas! and Louisiana! Sept.–Oct.—Stem 5–6 feet high, usually diffusely and somewhat paniculately branched above; the branches either opposite or alternate. Leaves 5–6 inches long; the lower ones narrowly ovate, with numerous coarse often irregular teeth; those of the branches often with few unequal teeth towards the base. Heads very numerous, rather small. Pappus about the length of the corolla.

§ 4. *Heads* 8–30-*flowered: scales of the campanulate involucre* 8–20, *nearly equal and in a single series: herbaceous: leaves opposite or rarely alternate, ovate, petioled, not punctate or sprinkled with resinous globules: achenia not glandular: flowers white or purple.*

20. *E. ageratoides* (Linn. f.): glabrous; stem branching; leaves opposite, on long petioles, broadly ovate, sometimes slightly cordate, acuminate, tripli-nerved, membranaceous, coarsely and sharply serrate; corymbs compound; heads 12–20-flowered; scales of the involucre 12–14, equal, in a single series, narrowly lanceolate, scarious and rather obtuse at the tips, slightly pubescent and ciliate; corolla narrowed below, campanulate at the summit, longer than the pappus; achenia glabrous.—*Linn. f.! suppl. p.* 355; *Willd.! spec.* 3. *p.* 1765; *Pursh! fl.* 2. *p.* 516; *Ell. sk.* 2. *p.* 303; *Bigel. fl. Bost. ed.* 2. *p.* 298; *Hook. fl. Bor.-Am.* 1. *p.* 305; *Darlingt. fl. Cest. p.* 451; *DC.! prodr.* 5. *p.* 175. E. urticæfolium, *Reich. syst.* 3. *p.* 719; *Michx.! fl.* 2. *p.* 100; not of *Linn. f. & Smith.* E. ceanothifolium, *DC. l. c.?* E. caule erecto, &c. *Linn.! hort. Cliff. p.* 396. Ageratum altissimum, *Linn.! spec.* 2. *p.* 839.

Moist rich woodlands and thickets, Canada! & Upper Missouri! to Georgia! and Louisiana! common, particularly in the Northern States. Aug.–Sept.—Stem 2–3 feet high; the summit and branches a little pubescent. Leaves usually large, 4–6 inches long, glabrous or with a few minute scattered hairs, mostly dilated and obtuse or truncate at the base, sometimes abruptly tapering into the petiole; the latter 1 to 2 inches in length. Flowers pure white, very numerous, exhaling a somewhat unpleasant odor. Lobes of the corolla ovate, glabrous. Style much exserted.

21. *E. aromaticum* (Linn.): pulverulent-pubescent or somewhat glabrous; stem simple or loosely corymbose at the summit; leaves opposite, on short petioles, or sometimes almost sessile, ovate, subcordate, or ovate-oblong, rather acute or obtuse, rarely acuminate, 3-nerved or tripli-nerved, of a thickish and firm texture, mostly scabrous-pubescent, rather obtusely dentate-serrate; corymbs loose, somewhat panicled; heads 8–20-(commonly 12–15-) flowered; scales of the involucre 10–14, linear-lanceolate, nearly equal, pubescent, with slightly scarious and obtuse tips; corolla narrowed below, campanulate at the summit, rather exceeding the pappus; achenia glabrous.—*Linn.! spec.* 2. *p.* 839 (fide *herb.!* & syn. *Pluk.! & Gronov.!*); *Willd.! spec.* 3. *p.* 1765; *Michx.! fl.* 2. *p.* 100; *Pursh! fl.* 2. *p.* 516; *Ait.! Kew.* (*ed.* 2.) 4. *p.* 508; *Ell.! sk.* 2. *p.* 304; *Bigel. fl. Bost. ed.* 2. *p.* 298; *Darlingt.! fl. Cest. p.* 452; *DC.! prodr.* 5. *p.* 175. E. cordatum, *Walt. Car. p.* 199; *DC.! l. c.* (the smaller-leaved forms.) E. melissoides, *Willd.! l. c. p.* 1754. (a dwarf form; heads about 8–flowered!) E. ceanothifolium, *Muhl. in Willd.! spec. l. c.* (fide *herb. Willd.;* but the heads at least 12-flowered, instead of 5-flowered); *Ell.! l. c.* (leaves small, petioled; heads 8–10-flowered!); *DC.! l. c.* (leaves larger, acuminate, nearly glabrous!) E. cordiforme & E. Fraseri, *Poir. suppl.* fide *DC.* (Eupatorium, *Lam. ill. t.* 672.)

Dry woods and usually in barren soil, from Massachusetts near the coast! to Florida! Alabama! and Louisiana! Aug.–Sept.—This species exhibits considerable variety in the form of the leaves, the length of the petioles, &c. It bears much resemblance to the preceding, and occasionally approaches it perhaps too closely; but it is a lower and more slender plant, with smaller and much firmer leaves on shorter petioles, fewer heads, but usually larger flowers. The root is perennial.

22. *E. ageratifolium* (DC.): shrubby, glabrous; the branches terete; leaves opposite, petioled, broadly ovate, somewhat truncate at the base, attenuate at the apex, obtuse, coarsely toothed, 3-nerved, not glandular; corymbs terminal, trichotomous; pedicels somewhat viscous, scarcely pubescent; heads about 10-flowered; scales of the involucre in a double series, linear, rather acute, slightly ciliate at the apex, at length spreading; pappus as long as the corolla; achenia puberulent, the angles somewhat scabrous. *DC.! prodr.* 5. *p.* 173.

β. Texense: branches, pedicels, petioles, and usually the veins of the leaves minutely puberulent; heads about 12-flowered.

Limestone rocks, Sabina's Creek (Camancheries) Texas, *Dr. Riddell!* (*β.*)—Shrub 6 feet high; the branches terete; the branchlets slightly angled. Leaves in shape and texture wholly resembling many forms of E. aromaticum; the corymbs also similar. Involucre about half the length of the flowers, glabrous or nearly so; the exterior scales 4–6, linear, rather acute, one of them shorter and bracteolate; the inner about the same number, rather broader, with narrow scarious margins, somewhat obtuse, scarcely ciliate at the apex. Corolla "white, slightly tinged with rose-color" (*Riddell*), dilated upwards, scarcely longer than the pappus; the teeth short, glabrous. Achenia puberulent, and appearing somewhat viscous.—The Texan plant accords almost exactly with De la Sagra's specimens from Cuba, except that the scales of the involucre are less ciliate and more obtuse.

23. *E. incarnatum* (Walt.): stem pulverulent-pubescent, branching; leaves opposite, on slender petioles, membranaceous, deltoid, truncate or subcordate (rarely only obtuse) at the base, tapering at the summit or acuminate, obtusely and coarsely toothed, 3-nerved at the base, slightly pubescent; corymb small, often panicled; heads 20-flowered; scales of the involucre 15–20, nearly equal, (a few of the outermost shorter,) in a somewhat double

series, subulate-linear, acute, 2-nerved, slightly pubescent; pappus about the length of the infundibuliform-tubular corolla; achenia glabrous.—*Walt. Car. p.* 200; *Ell.! sk.* 2. *p.* 306; *DC.! prodr.* 5. *p.* 175.

Rich soil, S. Carolina! to Florida! Louisiana! and Texas! Sept.–Nov. —Stem 2–3 feet high, at length decumbent and producing numerous branches. Leaves 1–2 inches long, the lateral nerves pedately branched from the base; petioles rather shorter than the lamina. Heads nearly as large as in E. ageratoides. Lobes of the corolla light purple, very short, ovate, obtuse, glabrous. Branches of the slightly exserted style very obtuse.—Considerably resembles Conoclinium cœlestinum.

24. *E. occidentale* (Hook.): nearly glabrous; stem (or branches) slender; leaves alternate (rarely opposite), on short petioles, ovate, acute or acuminate, tripli-nerved, coarsely and sparingly serrate; the uppermost narrow, entire; corymbs small and mostly simple, panicled; heads 15–25-flowered; scales of the involucre linear, acute, nearly equal, in a single series; corolla infundibuliform; achenia slender, glabrous.—*Hook.! fl. Bor.-Am.* 1. *p.* 305; *DC.! prodr.* 5. *p.* 176. E. Oreganum, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 286.

Interior of Oregon, in stony places, *Douglas! Nuttall!*—Plant 6–12 inches high. Flowers white or pale rose-color. Styles much exserted. Leaves about an inch long. [illegible]

Eupatorium luteum of Rafinesque doubtless belongs to some other genus; but it will never be identified by the following character: "*E. luteum* (yellow Eupatory); leaves linear, cuneiform, acute, entire, smooth; flowers paniculated; calyx 4-flowered.—In New Jersey." *Raf. in med. repos.* (*hex.* 2.) 5. *p.* 361.—*E. crassifolium* and *E. violaceum* are Rafinesquian species of the Florula Ludoviciana: the latter may be E. incarnatum, *Walt.*

Eupatorium Perrinnianum of Sprengel, and of Schlechtendal (in *Linnæa*, 11. *p.* 5), which came from the West Indies, and not from South America as Sprengel states, is a genuine species of Vernonia, (fide. sp. authen. in *herb. Torr.*): Prof. Schlechtendal must have overlooked the double pappus.

17. MIKANIA. *Willd. spec.* 3. *p.* 1452; *DC. prodr.* 5. *p.* 187.

Heads mostly 4-flowered. Receptacle naked, narrow. Scales of the involucre 4 or 5. Corolla dilated or campanulate at the summit, 5-toothed. Anthers partly exserted. (Style with a cylindrical glabrous bulb at the base; the branches exserted, filiform, scarcely obtuse.) Achenia angled. Pappus in a single series, capillary, scabrous.—Shrubby or herbaceous mostly climbing plants (chiefly tropical and American), with opposite commonly cordate leaves. Heads corymbose, panicled, or spicate. Flowers whitish.

1. *M. scandens* (Willd.): stem glabrous, twining; leaves on slender petioles, cordate, acuminate, repandly crenate or angularly toothed towards the base, membranaceous, slightly scabrous or pubescent, or glabrous; corymbs paniculate, clustered; scales of the involucre lanceolate; achenia minutely glandular.—*Willd. spec.* 3. *p.* 1743; *Pursh! fl.* 2. *p.* 517; *Ell. sk.* 2. *p.* 292; *Bigel. fl. Bost. ed.* 3. *p.* 314; *Darlingt. fl. Cest. p.* 454. Eupatorium scandens, *Linn.*; *Michx.! fl.* 2. *p.* 97; *Jacq. ic. rar. t.* 169.

β. pubescens: stem and leaves more or less pubescent.—M. pubescens, *Muhl. cat. p.* 71; *Nutt. gen.* 2. *p.* 136; *Ell. l. c.*; *DC.! l. c.*, & 7. (*mant.*) *p.* 271. Eupatorium scandens, *Linn.!* (as to specimen in his herb.); *Walt. Car. p.* 198.

Moist shady places, and along streams, Massachusetts! to Louisiana! common; the more pubescent forms occurring in the Southern States. July–Sept.—Flowers purplish-white or flesh-color. Anthers appendiculate at the apex.

18. CONOCLINIUM. *DC. prodr.* 5. *p.* 134.

Heads many-flowered. Involucre campanulate; the scales linear or subulate, somewhat imbricated in 2–3 series, nearly equal. Receptacle naked, conical! Corolla tubular-infundibuliform, 5-toothed at the summit. Anthers included. Branches of the style somewhat cylindrical, obtuse. Achenia angled, glabrous. Pappus capillary, scabrous, in a single series.—Perennial herbs or suffruticose (American) plants, with opposite petioled toothed leaves. Corymbs terminal, crowded. Flowers blue or purple.

1. *C. cœlestinum* (DC.! l. c.): herbaceous, pubescent or nearly glabrous; leaves deltoid-ovate, often slightly cordate, tapering to the apex, coarsely crenate-serrate, tripli-nerved, on slender petioles; scales of the (30–60-flowered) involucre about 30, nearly subulate.—Eupatorium cœlestinum, *Linn. spec.* 2. *p.* 838; *Willd.! spec.* 3. *p.* 1764; *Michx.! fl.* 2. *p.* 100; *Ell. sk.* 2. *p.* 306; *Darlingt.! fl. Cest. p.* 462. Cœlestina cærulea, *Spreng. syst.* 3. *p.* 446; *Beck! bot. p.* 198; *Hook.! compan. to bot. mag. p.* 96; not of *Cass.*, *Less.* &c.
Thickets &c. Pennsylvania, and throughout the Western and Southern States! Sept.—Stem 2–3 feet high, sometimes hairy. Flowers light bluish-purple, fragrant. Achenia dotted with resinous globules.—The genus is distinguished from Eupatorium merely by the conical receptacle.

Subtribe 2. TUSSILAGINEÆ, *Less.*—Heads with the flowers dissimilar or somewhat diœcious (white, purplish, or sometimes yellow); the pistillate either ligulate or tubular.

19. NARDOSMIA. *Cass. dict.* 35. *p.* 186; *Less. syn. p.* 139.

Heads many-flowered, somewhat diœcious. STERILE PL. Flowers of the ray in a single series, pistillate, ligulate; of the disk numerous, perfect but infertile, with the corolla tubular and 5-toothed. FERTILE PL. Flowers of the ray in several series, pistillate, minutely ligulate; those of the disk few, tubular. Scales of the involucre in a single series, equal to or shorter than the flowers. Receptacle flat, naked. Achenia somewhat terete, glabrous. Pappus capillary, that of the sterile plant shorter and less copious than of the fertile.—Perennial herbs (in N. America nearly confined to the northern regions). Leaves radical, cordate, toothed or lobed, petioled, appearing with or rather later than the flowers. Scape with scaly bracts; the heads in a fastigiate thyrsus or corymb. Flowers purplish or nearly white, fragrant.

1. *N. frigida* (Hook.): leaves cordate, unequally coarsely and obtusely toothed, and somewhat lobed, glabrous above, the lower surface white and

tomentose; the lobes at the base diverging. *DC.—Hook.! fl. Bor.-Am.* 1. *p.* 307 (excl. *β.* ?); *DC. prodr.* 5. *p.* 205. N. angulosa, *Cass. dict. l. c.*; *Less. in Linnæa,* 6. *p.* 107. Tussilago frigida, *Linn.*; *Fl. Dan. t.* 61; *Pursh, fl.* 2. *p.* 531. T. scapo imbricato, &c. *Gmel. fl. Sibir.* 2. *p.* 150, *t.* 70.

Arctic America, from lat. 66°, *Richardson!* Kotzebue's Sound! and Unalaschka! to Lake Winipeg, lat. 52°, the mountains of Canada, and the highest mountains of Vermont and New Hampshire, according to *Pursh.*

2. *N. corymbosa* (Hook.): leaves cordate, sinuate and acutely denticulate, oblong, acute, glabrous above, tomentose beneath; the lobes at the base diverging. *DC.—Hook.! l. c.*; *DC. prodr.* 5. *p.* 206. Tussilago corymbosa, *R. Br.! in Parry's 1st voy. suppl. p.* 269; *Hook. & Arn! bot. Beechey, p.* 126.

Arctic America, from Melville Island! to Kotzebue's Sound! and south to Fort Norman, in about lat. 65°.—Corymb with few heads.

3. *N. sagittata* (Hook.): leaves oblong, acute, sagittate, entire; the lobes obtuse, *DC.* (leaves cordate or reniform-sagittate, sinuate-toothed, tomentose beneath. *Hook.! l. c.*—Tussilago sagittata, *Pursh, fl.* 2. *p.* ~~332.~~ 531

Hudson's Bay (*Hutchinson*), *Pursh.* Swamps in the Rocky Mountains (*Drummond!*) and from Lake Superior in lat. 48°, to Fort Franklin in lat. 66°, *Richardson.*—With numerous specimens before us, we strongly suspect (as Hooker also does) that this and the two preceding are in reality one species. Hooker's N. sagittata has deeply toothed leaves, which are sometimes reniform. Can it be the same as Pursh's plant with "foliis integerrimis"?

4. *N. palmata* (Hook.): leaves reniform or roundish-cordate, tomentose beneath, palmately 5–7-lobed; the segments coarsely toothed, often incised or somewhat lobed.—*Hook.! fl. Bor.-Am.* 1. *p.* 308; *DC. l. c.* N. palmata, Hookeriana, & speciosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 288. Tussilago palmata, *Ait. Kew.* (*ed.* 1) 3. *p.* 188, *t.* 2; *Willd.! spec.* 3. *p.* 1972; *Pursh! fl.* 2. *p.* 531; *Beck, bot. p.* 199.

Swamps and shady banks of streams, Newfoundland & Labrador! and from Bear Lake, lat. 67°, to the Rocky Mountains! and to the Pacific at the mouth of the Oregon! Also Lake Huron and Maine, *Nuttall.* Fairhaven, Vermont, *Mr. Robbins! Prof. Beck.* Sunderland, Massachusetts, *Prof. Hitchcock!* Saratoga, New York, *Dr. Steele!* April–May.—Leaves sometimes 10 to 12 inches in diameter, when fully developed. Scape stout, 6–20 inches high, with numerous leaf-sheaths. Heads numerous, in a corymbose thyrsus.—Some specimens from the Rocky Mountains are noticed by Hooker, which, if they really belong to this species, approach the preceding perhaps too closely. Mr. Nuttall's N. Hookeriana is said to be founded upon the N. palmata of Hooker, as well as of Willdenow, Pursh in part, and De Candolle. His N. speciosa is the N. palmata of Hooker from Oregon: the specimens accord so well with the figure of Aiton, and with the plant of the Northern United States, &c. (which presents very considerable diversities in size and foliage) that we see not how it is to be distinguished. Although the species of this genus are by no means well settled, it is evident that little dependence can be placed on the degree of division or toothing of the leaves. The *submasculine* and *subfeminine* plants are different in appearance.

20. TUSSILAGO. *Tourn.*; *Gærtn. fr. t.* 170; *Less. syn. p.* 159.

Heads many-flowered, heterogamous. Flowers of the ray very narrowly ligulate, in several series, pistillate; those of the disk few, tubular (the limb of the corolla campanulate, 5-toothed), staminate. Scales of the involucre oblong, obtuse, somewhat in a single series. Receptacle naked. Anthers scarcely caudate. Style abortive in the flowers of the disk; in those of the ray 2-cleft, the branches somewhat terete. Achenia of the ray somewhat cylindrical-oblong, glabrous; in the disk abortive. Pappus of the ray-flowers in many series, of the disk in a single series, capillary.—A perennial herb, common throughout Europe and Asia, and sparingly naturalized in the northern portions of the United States. Rhizoma rather thick, horizontal. Leaves radical, appearing later than the flowers, cordate, angled or toothed, petioled. Scape clothed with scaly bracts, tomentose, bearing a single head. Flowers yellow.—*Colt's-foot.*

T. Farfara (Linn.)—*Fl. Dan. t.* 595; *Engl. bot. t.* 429; *Willd.! spec.* 3. *p.* 1967; *DC.! prodr.* 5. *p.* 208; *Beck, bot. p.* 200.

Wet places and low meadows in cultivated grounds; introduced from Europe. March–April.—The *Colt's-foot,* a well known article of the popular materia medica, although not enumerated by any American writer, except Prof. Beck, is perfectly naturalized in many parts of the Northern States, in moist grounds; where it sometimes becomes a troublesome weed.

21. ADENOCAULON. *Hook. bot. misc.* 1. *p.* 19, *t.* 15, & *fl. Bor.-Am.* 1. *p.* 308; *DC. prodr.* 5. *p.* 207.

Heads 5–10-flowered, heterogamous; the flowers all tubular and equal: those of the ray 5, in a single series, pistillate; of the disk 4–5, staminate. Corolla 4–5-lobed. Scales of the involucre several, in a single series, reflexed in fruit. Receptacle naked. Achenia obovate-oblong or clavate, bearing towards the summit numerous large stipitate glands. Pappus none. —Perennial (N. American & Chilian) herbs. Stem leafy towards the base, naked and paniculate above, clothed with a somewhat deciduous tomentose pubescence, glandular towards the summit. Leaves alternate, pinnately or palmately veined, membranaceous, petioled, glabrous above, tomentose and canescent beneath. Heads few, small, loosely paniculate. Flowers apparently white.

1. *A. bicolor* (Hook.! l. c.): leaves deltoid, mostly cordate, angularly toothed or sinuate, somewhat decurrent on the petiole.—*DC. prodr.* 5. *p.* 207.

β. integrifolium: leaves smaller, deltoid-ovate or slightly cordate, obscurely angulate-toothed or entire.—A. integrifolium, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 289.

Dense woods, Oregon, from Fort Vancouver, &c. *Dr. Scouler! Nuttall!* to the Rocky Mountains in lat. 52°, *Drummond!* Near the outlet of Lake Superior, *Dr. Pitcher!* June.—Stem 10–30 inches high, slender. Leaves 2–4 inches long, and usually about the same breadth at the base, densely tomentose beneath with a close white arachnoid pubescence. Anthers sagittate, acuminate, sterile and nearly unconnected in the fertile flowers. Style entire in the sterile flowers, in the fertile with two short obtuse lobes.—The var. *β.* appears to pass insensibly into the ordinary larger form; the toothing of the leaves is very inconstant.

TRIBE III. ASTEROIDEÆ. *Less.*

Heads heterogamous or sometimes homogamous, rarely diœcious. Style (in the perfect flowers) cylindraceous above; the branches flat or flattish, mostly linear or lanceolate, above equally pubescent externally; the conspicuous stigmatic lines terminating where the exterior pubescence commences, not confluent.—Leaves alternate, or rarely opposite.

CONSPECTUS OF THE SUBTRIBES.

Subtribe 1. ASTERINEÆ. Heads heterogamous and radiate, or homogamous. Receptacle seldom chaffy. Anthers not caudate. Leaves alternate. 95

Div. 1. ASTEREÆ. Heads radiate, heterochromous (rays never yellow).

Div. 2. CHRYSOCOMEÆ. Heads radiate, or homogamous, homochromous (both the ray and disk yellow). 190

Subtribe 2. BACCHARIDEÆ. Heads diœcious or heterogamous, but never radiate; the pistillate flowers tubular, slender or filiform, in several series. Receptacle not chaffy. Anthers not caudate. 257

Subtribe 3. TARCHONANTHEÆ. Heads diœcious or heterogamous, but never radiate; the pistillate flowers tubular and very slender, mostly in several series. Anthers caudate. 260

Subtribe 4. INULEÆ. Heads heterogamous and radiate, or homogamous and discoid, never diœcious. Receptacle not chaffy. Anthers caudate. Leaves alternate. 267

Subtribe 5. ECLYPTEÆ. Heads heterogamous, radiate. Receptacle chaffy. Anthers not caudate. Pappus toothed or awned, or none. Leaves opposite. 267

Subtribe 1. ASTERINEÆ, *DC.*—Heads heterogamous and radiate, or homogamous, never diœcious. Receptacle seldom chaffy. Anthers not caudate. Leaves almost always alternate.

Div. 1. ASTEREÆ, *DC.*—Heads heterogamous, radiate; the rays of the cyanic series (viz: white, purple, or blue, &c.); the disk-flowers yellow, but frequently changing to purple in fading. Receptacle not chaffy, except in a species of Corethrogyne.

CONSPECTUS OF THE GENERA.

Subdiv. 1. EUASTEREÆ.—Pappus of capillary or rarely subulate bristles.

* *Rays neutral or sterile. Pappus simple, capillary.*

22. GALATELLA. Appendages of the style triangular or deltoid-spatulate. Pappus of the ray and disk similar.

23. CORETHROGYNE. Appendages of the style densely penicillate. Pappus of the ray nearly or entirely wanting.

* * *Rays fertile. Pappus of the ray and disk similar (except in* Erigeron § Phalacroloma), *simple or double; the inner capillary.*

24. DIETERIA. Pappus simple, very unequal. Rays several or numerous, in a single series. Involucre obovate, much imbricated. Root mostly biennial. Leaves usually pinnately toothed or pinnatifid.

25. SERICOCARPUS. Pappus simple, unequal. Flowers of the ray and disk few. Involucre oblong, imbricated, cartilaginous.

26. ASTER. Pappus simple, copious. Rays numerous, in a single series. Involucre more or less imbricated. Receptacle alveolate.

27. ERIGERON. Pappus either simple (not copious), or double; the exterior setaceous-subulate or squamellate. Rays very numerous, and often in two or more series. Scales of the involucre nearly equal, almost in a single series. Receptacle naked.

28. DIPLOPAPPUS. Pappus double; the exterior short and setaceous or squamellate-subulate. Rays in a single series. Involucre imbricated.

* * * *Pappus of the ray and disk dissimilar.*

29. TOWNSENDIA. Pappus simple; that of the disk composed of subulate-capillary bristles; of the ray short and subulate. Achenia compressed.

30. CHÆTOPAPPA. Pappus double; the inner of 5 rigid bristles; the exterior of 1 to 5 hyaline scales. Achenia nearly terete.

31. BOLTONIA. Pappus of several very small, and 2 or more rigid and subulate larger bristles. Achenia flat, margined.

Subdiv. 2. BELLIDEÆ.—Pappus none, or minute and coroniform.

32. BELLIS. Achenia obovate, compressed. Pappus none.

33. APHANOSTEPHUS. Achenia terete. Pappus a very minute crown.

Subdiv. 1. EUASTEREÆ.—Pappus, at least the inner, composed of capillary or rarely subulate bristles. (Euastereæ, Diplopappeæ, Erigereæ, & Heteropappeæ, *DC.*)

22. GALATELLA. *Cass. dict.* 37. *p.* 463; *Nees, Ast. p.* 158. (excl. spec.)

Galatea, *Cass.* (*dict.* 18, *&c.*); *Less.*

Heads many-flowered; the ray-flowers few (3–12), sterile, but usually furnished with a rudimentary style, and sometimes with one or two abortive filaments; those of the disk tubular, perfect. Involucre shorter than the disk; the scales closely imbricated in 3 or 4 series, sometimes obscurely 1–3-nerved or slightly carinate, destitute of herbaceous tips; the outermost bracteolate. Receptacle alveolate, the alveoli toothed. Corolla of the disk with a cylindrical tube, and an expanded deeply 5-cleft limb; the lobes lanceolate-linear, spreading. Anthers exserted. Branches of the style (in the disk-flowers) linear, terminated by a short and broad deltoid-spatulate or triangular appendage. Achenia oblong or slightly cuneiform, somewhat compressed, silky-villous. Pappus composed of copious rather rigid unequal serrulate-scabrous capillary bristles; that of the ray similar but rather shorter.—Perennial herbs (natives of Europe, Northern Asia, and the United States); the stems simple below, corymbose at the summit. Leaves alternate, lanceolate or linear, entire, rather rigid, 1–3 nerved, veinless, often impressed-punctate. Heads terminating the fastigiate branches. Rays blue, purple, or nearly white; the disk-flowers yellow, sometimes changing to purplish.

Galatella scarcely differs from Linosyris except by the presence of (white or blue) rays; and these, according to Ledebour, are sometimes wanting in G. dracunculoides: the two genera have also nearly the same geographical range. The sterile rays chiefly distinguish it from Aster § ? Orthomeris (species of Calimeris of authors); to which Aster nemoralis, *Ait.* belongs.

1. *G. hyssopifolia* (Nees): nearly glabrous, minutely scabrous; the corymbose branches numerous and crowded; leaves lanceolate-linear, acute, narrowed at the base, punctate, 3-nerved; those of the branches small, subulate-linear; involucre about half the length of the disk; the scales acutish; the exterior ovate-lanceolate, rather fleshy; the interior larger, linear-oblong, with membranaceous margins; rays 5–10, longer than the disk.—*Nees, Ast. p.* 160; *DC.! prodr.* 5. *p.* 255. G. albiflora, *Cass. dict.* 18. *p.* 58. (under Galatea.) Aster hyssopifolia, *Linn.! mant. p.* 114; *Willd.! spec.* 3. *p.* 2022; *Pursh! fl.* 2. *p.* 543; *Ell.! sk.* 2. *p.* 342.

β. ? leaves mostly 1-nerved; rays 3–7, not exceeding the disk.—G. linifolia, *Nees, l. c.*; *DC.! l. c.* (excl. syn. *Linn.*) G. albiflora, *Cass. in dict. sci. nat.* 18. *p.* 58, fide *Nees.* Chrysopsis linifolia, *Nutt. gen.* 2. *p.* 152.

"Sandy fields and woods, New Jersey to Carolina," *Pursh!* Aug.–Oct. —Stem 1–2 feet high, strict. Leaves 1–3 inches long, spreading, 1-nerved, and often with two less distinct lateral nerves. Rays white, tinged with purple.—This is a very uncommon plant, if indeed it be a native of the United States. We have never met with an indigenous specimen, unless that in Elliott's herbarium, communicated by Muhlenberg, should prove to be so. Nees, however, professes to have seen not only spontaneous specimens of his G. linifolia (which appears to differ from G. hyssopifolia merely in its short rays), but even to have met with New Jersey specimens of G. dracunculoides. His G. leptophylla, an impunctate species of unknown origin, is also conjectured to be a native of North America. The species of Galatella are still in much confusion.

23. CORETHROGYNE. *DC. prodr.* 5. *p.* 215.

Heads many-flowered; the ray-flowers neutral, numerous, in a single series; those of the disk tubular, perfect. Scales of the hemispherical involucre imbricated in several series, lanceolate or linear, with somewhat spreading tips; the exterior shorter. Receptacle flat, obscurely alveolate, sometimes with linear chaff scattered among the flowers. Rays linear, elongated; the corolla of the disk cylindraceous, with 5 short (somewhat hairy) teeth. Anthers tipped with a filiform-cuspidate appendage. Branches of the style linear, bordered with conspicuous stigmatic lines, tipped with a dense penicillate tuft of rather rigid bristles. Achenia of the ray none, or a mere rudiment; of the disk cuneiform or turbinate, silky or villous. Pappus simple, of numerous rather rigid scabrous unequal bristles; that of the ray obsolete, or of few short and unequal bristles.—Perennial herbs or suffrutescent plants (natives of California), clothed with a soft and white, at length somewhat deciduous wool; the branches terminated by rather large solitary heads. Leaves numerous, linear-lanceolate or oblanceolate, mucronulate, closely sessile; the radical and lowermost tapering into a petiole, serrate or toothed towards the apex. Rays violet-purple; the disk yellow. Pappus turning reddish-brown or purplish.

To this interesting genus (founded upon a Californian plant collected by Douglas) we had referred, from their description, the Aster ? filaginifolius and A. ? tomentellus of Hooker & Arnott in Beechey's Voyage. Some time afterwards, finding two species in the collection of Mr. Nuttall, upon which he had established a new genus (*Heterostephium*) in a memoir read before the American Philosophical Society, we informed him that they belonged in our opinion to Corethrogyne, notwithstanding the want of chaff upon the receptacle, and that they were the two doubtful Asters of Hooker and Arnott, mentioned above, and one of them probably the C. Californica of De Candolle. Mr. Nuttall published them accordingly as species of Corethrogyne, one under the name of C. incana (supposing it to be the Diplopappus incanus, *Lindl.*), the other as C. filaginifolia. Having since had the opportunity of comparing original specimens of all these plants, our opinion, as regards the genus, is fully confirmed: so perfect, indeed, is the resemblance between the C. incana, *Nutt.* and C. Californica (excepting the chaff of the latter), that we still strongly suspect they will prove to be the same species. The A.? tomentellus, *Hook. & Arn.* is however a different species, perhaps too near C. filaginifolia.

§ 1. *Receptacle with linear membranaceous chaffy scales intermixed among the flowers, usually, if not always, wanting in the centre of the head.*

1. *C. Californica* (DC.): stems and simple branches very woolly, leafy; leaves linear-lanceolate, suberect; the lower ones lanceolate-oblong, tapering to the base, sparingly toothed; scales of the hemispherical involucre glandular-viscid, with somewhat spreading tips; achenia densely silky-villous.—*DC.! l. c.; Hook. & Arn.! bot. Beechey, suppl. p.* 350.

California, *Douglas!*—Leaves an inch or more in length, acute, woolly like the stem, resembling a Gnaphalium. Heads broad, three-fourths of an inch in diameter. Scales of the involucre rigid; the innermost linear, as long as the disk, scarious below; the exterior shorter, entirely herbaceous and glandular-viscid externally, and also slightly woolly: the summit of the branches likewise slightly glandular. Chaff of the receptacle narrow, scarious, sometimes as long as the flowers and with herbaceous tips, but some of them reduced to hyaline scales not more than twice the length of the achenia. The achenia are densely clothed with very white and silky villous hairs, which project beyond the summit, so as to appear like a short exterior pappus: bristles of the pappus unequal in size and length: the achenia of the ray an abortive rudiment, with a pappus few or several, short, and very unequal bristles, some of the stronger almost subulate.

§ 2. *Receptacle destitute of chaff.*

2. *C. incana* (Nutt.): very woolly; stem very leafy, branching above; the branches bearing 1 to 3 heads; leaves linear-lanceolate, suberect; the lowermost oblong-lanceolate, tapering to the base, sparingly toothed; scales of the hemispherical involucre glandular-viscid, with somewhat spreading tips; the exterior tomentose; achenia silky-canescent.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 290, excl. syn.

St. Diego, California, *Nuttall!* May.—The ray-flowers (light bluish-purple, *Nutt.*) present scarcely a trace of an ovary, and a rudimentary pappus of only 3 or 4 very short bristles; the fertile achenia are clothed with a rather shorter pubescence; the tuft of bristly hairs which crowns the branches of the style is not so strong as in the preceding species; and there are no chaffy scales on the receptacle: otherwise the two plants appear exactly alike. It is said to exhale the heavy aromatic odor of some species of Gnaphalium.—The Diplopappus incanus, *Lindl.*, referred here by Nuttall, is a species of Dieteria.

3. *C. filaginifolia* (Nutt.): clothed with a loose somewhat floccose and deciduous wool; branches slender, rather naked above; lower leaves oblong-spatulate or oblanceolate, very sharply or incisely serrate towards the apex, tapering into a short petiole; those of the branchlets lanceolate, sessile, often entire, scattered; scales of the somewhat obovoid involucre imbricated in 3 or 4 series, acute, somewhat appressed, membranaceous, not glandular, at

first woolly-canescent, at length nearly glabrous; achenia cuneiform-oblong, compressed; silky-pubescent.—*Nutt.! l. c.* Aster? filaginifolius, *Hook. & Arn.! bot. Beechey, p.* 146. (Diplopappus leucophyllus, *Lindl. in DC. prodr.* 5. *p.* 278?) The original spec. Beechey = exactly Hartw. 1771. A. G.

Monterey, California, *Capt. Beechey!* St. Barbara, *Nuttall!*—Plant more slender and branched than the preceding, apparently slightly suffruticose at the base; the pubescence similar, but looser and more deciduous. Heads smaller; the scales of the involucre fewer, and not glandular or viscid. Pappus of the ray almost none. Young achenia turbinate and silky-canescent; when mature compressed and minutely silky-pubescent. The style resembles that of the preceding species.

4. *C. tomentella:* stem shrubby at the base; the branches slender, woolly, leafy to the summit; leaves (of the branches) appressed, linear or linear-oblong, closely sessile; those of the short branchlets or peduncles crowded, very small and bract-like, passing into the oblong obtuse tomentose scales of the somewhat turbinate involucre; achenia silky-canescent.—Aster? tomentellus, *Hook. & Arn.! bot. Beechey, p.* 146. = 267 Coulter, Calif. though [illegible]

Monterey, California, *Capt. Beechey!* (v. sp. in *herb. Hook.*)—We have seen but a single and imperfect specimen, which has still smaller heads than C. filaginifolia: the oblong or slightly spatulate scales of the involucre are pretty closely imbricated in 4 or 5 series, and gradually pass into the very short bract-like leaves of the branchlets; they are somewhat membranaceous, obtuse, but often slightly mucronulate; the tips somewhat spreading. The leaves of the branches are small, densely woolly; the upper oblong; the lowest linear; those of the proper stem unknown. [illegible]
and it plainly includes no. 267, Calif. Coulter. The [illegible] of [illegible] leucophyllus, Lindl.! & Coulter no 266 with [illegible] heads, [illegible]

24. DIETERIA. *Nutt. in trans. Amer. phil. soc.* 7. *p.* 300. (excl. spec.)

Heads many-flowered; the ray-flowers numerous (10–30), in a single series, pistillate; those of the disk tubular, perfect. Scales of the obovoid or turbinate involucre closely imbricated for the most part in several series, linear, rigid, somewhat carinate, unequal, with herbaceous squarrose-spreading or recurved tips. Receptacle flat, somewhat alveolate; the alveoli toothed or lacerate. Rays linear; the corolla of the disk cylindraceous, often narrow, 5-toothed. Appendages of the style filiform-subulate or linear-lanceolate, minutely hirsute. Achenia turbinate or cuneiform, often compressed, pubescent or silky. Pappus of numerous scabrous and rather rigid capillary bristles, very unequal (in 2 or 3 series); that of the ray similar but frequently shorter and less copious.—Annual, biennial, or triennial herbs (natives of arid or naked plains between the Mississippi and the Pacific), divaricately branched, canescent or pulverulent-pubescent, or sometimes viscid. Leaves rarely entire, usually pinnately toothed or pinnatifid, narrow; the cauline sessile. Heads (often large) solitary or several on the corymbose or racemose branches. Rays purple or violet, rarely ochroleucous; the disk-flowers yellow. Pappus tawny or brownish.

§ 1. *Scales of the involucre imbricated in several series, with short herbaceous tips: leaves usually rigid, spinulose-toothed or pinnatifid, sometimes entire; the cauline linear, the radical lanceolate or spatulate (rays pistillate, but sometimes infertile?).*—DIETERIA proper.

* *Corolla of the disk very narrow, not dilated at the summit: appendages of the style subulate-filiform.*

1. *D. sessiliflora* (Nutt.): viscidly pubescent; stems simple; heads spicate-racemose, often crowded; leaves linear or somewhat lanceolate, incisely spinulose-toothed; rays (12–15) ochroleucous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 301.

Denudated plains of the Rocky Mountains and Oregon, *Nuttall!*—Stems about a foot high, mostly simple, the base and lower leaves minutely canescent; the upper portion, involucre, &c. viscid. Heads rather smaller than the following, scarcely a third of an inch in diameter, obovate or turbinate, disposed in a close or crowded raceme or spike. Achenia, as in the other species of this division, narrow, canescently pubescent.—Very nearly allied to the following species.

2. *D. viscosa* (Nutt.): pulverulently pubescent and viscid; stems simple, racemosely branched or somewhat corymbose; leaves linear, acute or acuminate, incisely spinulose-toothed; rays (18–20) purple.—*Nutt.! l. c.*

With the preceding, particularly near Scott's Bluff on the Platte, *Nuttall!*—"Stem simple, often very viscid, and exhaling the strong heavy scent of Aster graveolens or Gnaphalium Americanum. Leaves sometimes nearly pinnatifid or runcinate." *Nutt.*—Scales of the turbinate involucre very numerous, linear, rigid, with short squarrose-recurved tips.

3. *D. divaricata* (Nutt.): minutely canescent, not glandular or viscid; stem racemose or racemose-compound; the branches divaricate; radical and lower leaves lanceolate or somewhat spatulate, strongly spinulose-toothed; the upper linear, small, often nearly entire; rays (12–16) short, pale blue or purple.—*Nutt.! l. c.*

Denudated plains of the Rocky Mountains and Oregon, common, *Nuttall!*—About a foot high; branches rather naked, with small leaves, spreading out into a compound corymb. Pappus fulvous or white. *Nutt.*—The heads are about the size of the preceding, apparently more broadly obovoid or almost hemispherical; with rather broader, fewer, and less acute, perhaps less rigid, canescently puberulent (but not glandular or viscid) scales. The rays, as in the preceding, are not much longer than the disk.—These species are so nearly related that they may hereafter be found to pass into each other.

4. *D. incana*: perennial? minutely canescent throughout with a very short soft pubescence; stem stout, racemosely branched; the branches often elongated and corymbose, terminated by single large heads; leaves linear, mucronulate, entire, or frequently with a few laciniate mucronate teeth near the base; involucre obovoid-hemispherical; the linear slightly glandular scales imbricated in numerous series, with very acute squarrose tips; rays (about 30) large, bright violet; achenia narrow, canescent.—Diplopappus incanus, *Lindl.! bot. reg. t.* 1693; *Hook.! bot. mag. t.* 3382; *DC.! prodr.* 5. *p.* 278.

California, *Douglas!* (probably from the interior.)—Stem stout, 1–2 feet high, apparently a little woody at the base: the branches simple or somewhat branched, ascending, racemose, becoming corymbose at the summit. Leaves 1–2 inches long, closely sessile or slightly clasping, about 2 lines wide; the lower obtuse, but mucronulate, often presenting 1 to 3 or 4 slender divaricate and mucronate teeth on each side near the base. Heads in the wild plant about two-thirds of an inch, in the cultivated nearly an inch, in diameter, without including the numerous and large broadly linear rays.—This is a genuine species of Mr. Nuttall's Dieteria, and the most showy of the genus. The late Mr. Douglas alone seems to have met with it. The cultivated specimens are less canescent, the branches more elongated, the heads larger, the involucre more hemispherical, with narrower and more squarrose scales.

* * *Appendages of the style subulate or somewhat lanceolate: pappus more slender.*

5. *D. canescens* (Nutt.): minutely canescent with a soft pubescence; stem low, much branched, corymbose; leaves linear, entire; the radical spatulate; scales of the obovoid involucre lanceolate, acute, imbricated in about 4 series, with slightly squarrose tips; rays (18–20) rather large, purplish-blue. —*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 300. Aster canescens, *Pursh! fl.* 2. *p.* 547. A. biennis, *Nutt.! gen.* 2. *p.* 155.
Upper Missouri, in denudated argillaceous soils, from the Arikarees to Fort Mandan, *Nuttall!* (who alone has collected it.) Aug.–Oct.—Stem about a foot high, divaricately branched, fastigiate at the summit, bearing numerous heads about as large as a Daisy. Scales of the involucre rigid, canescent, with short greenish tips. Cauline leaves closely sessile, 1 to 2 inches long, 1 to 2 lines wide. Appendages of the style subulate-lanceolate.

6. *D. pulverulenta* (Nutt.): somewhat canescently puberulent; stem low, much branched from the base, the branches fastigiate, bearing few heads on rather naked branchlets; leaves linear or lanceolate; the lower sparingly toothed or spinulose-serrulate; the uppermost entire; scales of the hemispherical involucre lanceolate, acute, imbricated in about 3 series; rays (8–12) short, pale purple.—*Nutt.! l. c.*
Arid plains towards the sources of the Platte, *Nuttall!*—About 6 inches high. Nearly allied to the preceding; the heads smaller, the scales of the involucre less imbricated, somewhat viscid? Appendages of the style subulate.

§ 2. *Scales of the hemispherical involucre nearly equal, imbricated in about 3 series, linear, with a short appressed somewhat cartilaginous base, and elongated acute spreading herbaceous tips: receptacle obscurely alveolate: achenia obovate, many-striate: pappus of the ray and disk nearly equal: leaves not rigid, pinnatifid and bipinnatifid.*—PAPPOCHROMA, Nutt.

7. *D. coronopifolia* (Nutt.): pubescent and somewhat viscid, diffusely branched from the base; the branches mostly terminated by single (showy) heads; radical and lower leaves bipinnatifid, petioled; the upper pinnatifid, with the segments toothed or incised; rays (about 20) large, reddish-purple; achenia villous.—*Nutt.! l. c.* Chrysopsis (Pappochroma) coronopifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 34.
Dry naked places along streams, from the Upper Missouri and Platte to the Rocky Mountains, *Mr. Wyeth! Nuttall!* July–Aug.—Root annual or biennial? Stems 6–10 inches high. "Heads nearly as large as the garden Marigold." Scales of the involucre with long and loose herbaceous very acute summits. Appendages of the style subulate. Achenia large, compressed, but turgid, nearly as long as the pappus when mature. Pappus reddish-brown, copious, rather rigid; the bristles in 3 or more unequal series.

25. SERICOCARPUS. *Nees, Ast. p.* 148; *DC. prodr.* 5. *p.* 261.

Aster § Leucocoma, *Nutt.* (1834.)

Heads 12–15-flowered; the ray-flowers about 5, distant, pistillate; those of the disk tubular, perfect. Scales of the obovate-oblong or turbinate-cylindrical involucre closely imbricated in several series, nerveless or obscurely 1-nerved; the lower portion cartilaginous (whitish), appressed; the apex herbaceous, often spreading or squarrose. Receptacle small, alveolate; the alveoli toothed or lacerate-ciliate. Rays oblong-linear; the corolla of the disk slightly expanded at the summit, 5-lobed; the lobes revolute, lanceolate, acute. Appendages of the style (in the disk flowers) lanceolate-subulate, minutely hispid, longer than the stigmatic portion. Achenia obpyramidal, short, densely silky. Pappus simple, composed of rather numerous and rigid unequal scabrous bristles, some of them thickened upwards.—Perennial (North American) herbs, corymbose at the summit; with alternate entire or serrate sessile leaves. Heads in crowded corymbs, sometimes fascicled or glomerate. Flowers of the ray white; those of the disk pale yellow, rarely changing to purplish.

§ 1. *Involucre about the length of the disk; the exterior scales oblong or oval, closely appressed, with rigid herbaceous squarrose tips.*

1. *S. conyzoides* (Nees): stem somewhat pubescent, slightly angled; leaves ciliate, glabrous beneath, veiny, obscurely 3-nerved; the upper ones oblong or lanceolate, often entire; the lowermost spatulate-oval, coarsely serrate towards the apex, tapering into a slender margined petiole; involucre somewhat turbinate; rays rather short; pappus ferruginous.—*Nees, Ast. p.* 150; *Darlingt.! fl. Cest. p.* 470; *DC.! prodr.* 5. *p.* 161. Conyza asteroides, *Linn.! spec.* 2. *p.* 861; *Walt.! Car. p.* 204. Aster conyzoides, *Willd. spec.* 3. *p.* 2043; *Pursh! fl.* 2. *p.* 555; *Ell.! sk.* 2. *p.* 341; *Nutt.! gen.* 2. *p.* 158 (& β. plantaginifolius); *Bigel. fl. Bost. ed.* 2. *p.* 311. A. Marilandicus (*&c. Pluk. mant.*), *Michx.! fl.* 2. *p.* 108. Solidago calycibus squarrosis, flosculis, &c., *Gronov.! fl. Virg.* (*ed.* 1) *p.* 97.

Dry woodlands, Massachusetts! to Florida! common. June–Aug.—Plant 1–2 feet high. Leaves rather firm, 1–3 inches long. Heads sometimes solitary and pedicellate, but usually sessile in small clusters. Rays much shorter than in the S. solidagineus, but always longer than the disk.

2. *S. solidagineus* (Nees): glabrous; stem angled with decurrent lines: leaves linear-oblanceolate, or linear, obtuse, tapering to the base, entire, with serrulate-scabrous margins, indistinctly 3-nerved or slightly veiny, obscurely punctate; heads (small) glomerate at the extremity of the fastigiate peduncles; involucre cylindraceous, few-flowered; rays elongated; pappus white.—*Nees, Ast. p.* 149; *Hook.! fl. Bor.-Am.* 2. *p.* 14; *Darlingt.! fl. Cest. p.* 470; *DC.! l. c.* Conyza linifolia, *Linn.! l. c.*; *Walt.! Car. p.* 204. Aster solidaginoides, *Michx. in Willd.! spec.* 3. *p.* 2024; *Pursh! fl.* 2. *p.* 543; *Nutt.! l. c.*; *Ell. l. c.* A. solidagineus, *Michx.! fl.* 2. *p.* 108. A. Americanus albus, &c., *Pluk. alm. t.* 79, *f.* 2. Galatella obtusifolia, *Lehm.! ind. sem. hort. Hamb.* 1837.

Moist woodlands, Canada! and Northern States! to Alabama! and Louisiana! not very common. July–Sept.—Plant pale yellowish-green, about 2 feet high; the stems slender, often several from the same root or woody caudex. Heads in small close clusters, few-flowered; the scales of the involucre glabrous, broad, white, with abrupt green tips. Rays much longer than the disk.

§ 2. *Involucre mostly shorter than the disk; the scales linear or narrowly-oblong, less rigid and appressed; the tips greenish but scarcely squarrose.*

3. *S. tortifolius* (Nees): slightly canescent with a minute dense pubescence; leaves short, spatulate-oblong or obovate, entire, mucronulate, 1-nerved, obscurely punctate, spreading and usually vertical, both surfaces similar, heads

in loose compound corymbs, mostly pedicellate and bibracteate; scales of the obovoid involucre narrowly oblong, with acutish slightly spreading tips; rays longer than the copious white pappus.—*Nees, Ast. p.* 151; *DC.! l. c.* Conyza bifoliata, *Walt. Car. p.* 204. Aster tortifolius, *Michx.! fl.* 2. *p.* 109; *Ell.! sk.* 2. *p.* 341.

β. Collinsii: leaves sparingly crenate-serrate.—Aster (Leucocoma) Collinsii, *Nutt.! in jour. acad. Philad.* 7. *p.* 82.

Barrens and dry pine woods, Virginia! and North Carolina! to Florida! and Louisiana! *β.* Florida, *Mr. Ware!* Aug.–Sept.—Plant about 2 feet high, branched above. Leaves 6–12 lines long, rigid.—Heads as large as in S. conyzoides, seldom clustered. Flowers of the disk 10 or more. Achenia short.—In a specimen collected in Virginia by Mr. Durand, the lower leaves are sparingly crenate-serrate, and the others entire.

4. *S. Oregonensis* (Nutt.): nearly glabrous; leaves broadly lanceolate, rather acute, entire, 1-nerved, veiny, both sides and especially the margins scabrous; heads clustered in small compact corymbs; scales of the turbinate involucre oblong-linear, 1-nerved; rays longer than the (white) pappus; achenia slender.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 302.

Oregon, *Nuttall!*—Plant apparently rather large and stout, somewhat branched. Leaves 2–3 inches long, nearly half an inch wide, thickish, narrowed at the base; those of the branchlets small. Heads rather larger than in the following species, about 15-flowered. Achenia not very densely silky, nearly linear, fully half the length of the pappus.—We have reason to think that this will prove a mere variety of the succeeding; yet the exserted rays may afford a constant character.

5. *S. rigidus* (Lindl.): nearly glabrous; leaves oblong-spatulate, or oblanceolate, obtuse, often mucronulate, entire, somewhat 3-nerved, veiny, both surfaces very scabrous, the margins ciliate-scabrous; heads clustered in small compact corymbs; scales of the turbinate involucre narrowly oblong or linear, 1-nerved; rays shorter than the (white) pappus; achenia rather slender.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 14, *& in DC. l. c.*; *Nutt.! l. c.* (*β.* lævicaulis.) Galatella platylepis, *Nees, in herb Arn.*

Low hills and gravelly soil, Oregon, around Fort Vancouver, &c. *Douglas! Dr. Scouler! Nuttall!* July–Aug.—Plant 1 to 2 feet high; the simple stems, or the few corymbose branches, terminated by small compact corymbs. Leaves an inch in length, rigid. Heads about 15-flowered, nearly as large as in S. conyzoides. Inner scales of the involucre about the length of the disk, scarious; the exterior with somewhat squarrose greenish tips. Rays inconspicuous, but perhaps always present, and fertile. Achenia when mature about half the length of the pappus, not very densely silky.

26. ASTER. *Tourn. inst. t.* 174; *Linn. gen. no.* 954. (excl. spec.)

Aster, Biotia, Tripolium, Heleastrum, & species of Calimeris, *DC.*

Heads many-flowered; the ray-flowers in a single series, pistillate; those of the disk tubular, perfect. Scales of the involucre more or less imbricated, usually with herbaceous or foliaceous tips. Receptacle flat, alveolate, or rarely naked. Appendages of the style (in the disk-flowers) lanceolate or subulate, acute, rarely triangular or obtuse. Achenia usually compressed. Pappus simple, of numerous, often unequal, scabrous capillary bristles.—Perennial herbs, or rarely annual (Tripolium), chiefly natives of North America. Leaves alternate, entire or serrate. Heads corymbose, paniculate, or racemose. Rays white, purple, or blue; the corolla of the disk yellow, often changing to purple.

We are greatly indebted to several botanists and public institutions of this country for the use of their entire collections of American Asters; and we would especially render our acknowledgments to Sir Wm. Hooker, who, by most liberally entrusting to our care his vast materials in this and other allied genera, has afforded the most important assistance. Notwithstanding the very favourable opportunities we have enjoyed, our arrangement of this, probably the most difficult genus in North American botany, although the result of much labor, is by no means so satisfactory as could be desired. Although much remains to be done before our species can be considered as well settled, still we trust that our attempt will be found to have contributed to this result, and that most of our indigenous Asters may be satisfactorily identified by the student. The chief remaining difficulties relate to the species of the sections *Dumosi* and *Salicifolii* of Aster proper, which may probably be hereafter much better defined, and also somewhat increased in number, in some instances perhaps by the separation of species which we have ventured to unite, as well as by the identification of various cultivated plants with their native originals. It is well known that many of the enumerated species, both of earlier and later authors, have been described from plants long cultivated in European gardens, where they have doubtless undergone great alterations in appearance; to say nothing of the strong probability of occasional hybridization. A large, and indeed increasing number of these are only known as garden plants; and it is probable that many will never be identified with their original types; even supposing them to have been derived in all cases from this country, which is by no means certain. As we have chiefly directed our attention to the indigenous plants, and have drawn our descriptions from these alone, we have thought it advisable to bring together, at the close of our account of the proper Asters known to us, those species of garden origin which we have not identified with native specimens. A fuller comparison than we have been able to institute will doubtless considerably reduce their number. Those botanists who are most familiar with our Asters in their native situations, and with the changes produced by difference of soil, exposure, season, &c. will not be greatly surprised at numerous reductions of species which others may think unwarranted. We have only to say, that we have seldom ventured upon such reductions, except on the authority of a full suite of specimens which appeared to present absolute transitions. An obvious difference between two or three specimens is often entirely inappreciable in a fuller series, and thus loses its value as a means of distinction: but the claims of a genuine species are generally confirmed by a large number of specimens. It must, however, be admitted that, in this as in all large and natural genera, several species which we cannot but consider as distinct (such for instance as A. cordifolius and A. sagittifolius) do frequently present very puzzling intermediate forms; and that an apparent transition is not always real. Yet it is better, perhaps, to hazard the occasional reduction of even true species to varieties, than to multiply species which we are confessedly unable to define. We may remark, in conclusion, that we are the more inclined to act upon our own convictions, on account of the very frequent and wide disagreement even of the highest authorities upon this genus.

§ 1. *Involucre obovate-campanulate; the scales regularly imbricated in several series, appressed, nearly destitute of herbaceous tips; the exterior successively shorter: receptacle alveolate: rays* 6–15: *appendages of the style subulate-lanceolate, recurved or diverging, minutely hispid: bristles of the pappus unequal, rather rigid; the inner series mostly slightly thickened towards the apex: achenia linear, slender, scarcely compressed, somewhat 3-angled or striate: stem corymbose at the summit: leaves (ample) mostly petioled, coarsely serrate; the radical and lower cauline on long petioles, cordate.*— BIOTIA, DC.

1. *A. corymbosus* (Ait.): stem slender, often flexuous, terete; leaves membranaceous, coarsely or incisely and unequally serrate with sharp spreading teeth, conspicuously acuminate, all but the uppermost cordate and on slender naked petioles, ovate or ovate-lanceolate; heads loosely corymbose; involucre shorter than the disk; the exterior scales roundish-ovate; rays (white) 6–9.—*Ait. Kew.* (*ed.* 1) 3. *p.* 207; *Willd. spec.* 3. *p.* 2036;

Pursh! fl. 1. *p.* 552; *Ell. sk.* 2. *p.* 365. A. divaricatus, *Linn. spec.* 2. *p.* 873? (fide *herb.!*) excl. syn. *Gronov. & Pluk.* Eurybia corymbosa, *Cass. in dict. sci. nat.* 27. *p.* 487; *Nees, Ast. p.* 143; *Lindl.! bot. reg. t.* 1532; *Hook.! fl. Bor.-Am.* 2. *p.* 14; *Darlingt.! fl. Cest. p.* 469. Biotia corymbosa, *DC.! prodr.* 5. *p.* 265.

Dry woodlands, Canada and Northern States! to the middle country or mountains of the Southern States! July–Aug.—Stem 1–2 feet high, glabrous, or pubescent towards the summit, where it branches into a loose (often somewhat leafy) corymb. Leaves very thin and membranaceous, 2–4 or 5 inches long, strongly serrate with sharp and spreading rather distant and irregular teeth, which are tipped with conspicuous mucronate-acuminate points, glabrous or sparsely hairy above, and often hairy on the midrib and veins beneath, as also the slender petioles, varying from broadly ovate to ovate-lanceolate, but all except the uppermost cordate; the upper rarely with margined petioles; the uppermost sessile and sparingly serrate. Heads smaller than in the following species, the outer scales of the involucre (smooth, except the ciliate-pubescent margin) rounder and less rigid. Pappus tawny. Achenia nearly glabrous when mature.—Lindley cites the Aster cordifolius of Michaux as a synonym of this species, on the authority of a specimen communicated by A. Richard: but, if we mistake not, the chief specimens of his proper herbarium accord with the Linnæan A. cordifolius.

2. *A. macrophyllus* (Linn.): stem stout, somewhat striate-angled, roughish-pubescent above, the corymbose branches also rigid; leaves thickish, scabrous, closely serrate, somewhat acuminate; the radical and lower ones (large) cordate, on slender petioles; the upper sessile or on margined petioles; heads in ample corymbs; involucre nearly the length of the disk; the exterior scales rigid, oblong or ovate-oblong; rays (white or purplish) 12–15.—*Linn.! spec.* (*ed.* 2) 2. *p.* 1232; *Ait. Kew.* (*ed.* 1) 3. *p.* 207; *Michx.! fl.* 1. *p.* 114; *Willd. spec.* 3. *p.* 2037; *Pursh! fl.* 2. *p.* 552. Eurybia macrophylla, *Cass. in dict. sci. nat.* 27. *p.* 487; *Nees, Ast. p.* 140 (excl. syn. Ast. divaric. &c.); *Darlingt.! fl. Cest. p.* 465; *Hook.! fl. Bor.-Am.* 2. *p.* 14. Biotia macrophylla, *DC.! prodr.* 5. *p.* 265.

β. stem and leaves nearly smooth and glabrous; heads usually smaller. —Aster Schreberi, *Nees, synops. p.* 16; *Spreng. syst.* 3. *p.* 535. Eurybia Schreberi, *Nees! Ast. p.* 138. Biotia Schreberi, *DC.! l. c.* (Varies, with the heads somewhat glomerate on short pedicels, and the rays shorter; apparently an accidental state. Eurybia glomerata, *Bernh. in Nees, Ast. l. c.* Biotia glomerata, *DC.! l. c.*)

γ. exterior scales of the involucre broadly ovate or roundish-oval; otherwise as in α.

Woodlands, Canada! (from the Saskatchawan!) and Northern States! Aug.–Sept.—Stem 1½–3 feet high, usually broadly corymbose; the upper portion, as well as the pedicels and involucre, clothed with a close puberulence which appears glandular or viscid under a lens, often with roughish hairs intermixed; below, as also the petioles, either smooth or with a rough pubescence. Radical leaves 4–10 inches long and 3–6 in width, varying from roundish-cordate to cordate-oblong, serrate with broad and short mucronate teeth, often sparsely hirsute, and usually hairy on the midrib and strong veins beneath; the petioles 4–12 inches long: cauline leaves smaller, ovate or oblong; the upper closely sessile; the lower abruptly narrowed into a margined or winged petiole. Heads mostly large: the involucre about half an inch in diameter; the exterior rigid scales pubescent-ciliate, acutish or obtuse; the innermost much larger and membranaceous. Pappus tawny, or reddish. Achenia linear, obscurely striate, almost glabrous when mature.—There are certainly but two species of Biotia indigenous to the United States. B. (Eurybia, *Nees*) commixta, *DC.* is of doubtful origin; but perhaps it is only a form of this species.

§ 2. *Scales of the involucre imbricated in several series, coriaceous, with herbaceous spreading or squarrose tips: receptacle alveolate: rays numerous* (12–30)*: appendages of the style lanceolate: bristles of the pappus rigid, unequal, a portion of the inner more or less thickened towards the summit: achenia narrow, angled or striate, slightly or scarcely compressed: cauline leaves sessile, rigid; the radical never cordate: heads large and showy.* —CALLIASTRUM.

This section closely approaches Biotia through Aster Radula, and Sericocarpus by A. gracilis: it appears to form a very natural group. The inner bristles of the pappus become more rigid and more evidently thickened above as they grow old.

3. *A. Radula* (Ait.): stem strict, glabrous, angled with decurrent lines, somewhat corymbose at the summit; the branches few, nearly simple and naked, slightly pubescent; leaves lanceolate or oblong-lanceolate, acuminate, mostly narrowed towards the base, closely sessile, scabrous both sides and somewhat rugose, sharply serrate, at least in the middle; involucre campanulate-hemispherical, shorter than the disk; the scales oblong, rather obtuse, pubescent-ciliate, appressed, with slightly spreading herbaceous tips; achenia glabrous, linear-oblong, many striate.—*Ait. Kew.* (*ed.* 1) 3. *p.* 210; *Pursh, fl.* 2. *p.* 556; *Nees, Ast. p.* 43; *Hook.! fl. Bor.-Am.* 2. *p.* 7; *DC.! prodr.* 5. *p.* 230.

β. leaves ovate-lanceolate, or the lower ones somewhat obovate-oblong, acute or slightly acuminate.—A. nudiflorus, *Nutt. gen.* 2. *p.* 157; *Darlingt.! fl. Cest. p.* 462; *DC. l. c.*

Moist copses and low grounds, Nova Scotia (*Aiton*) and Newfoundland! Lubeck, Maine, *Mr. Oakes!* Near Boston and Salem, Massachusetts, *Nuttall! Dr. Greene! Dr. Pickering!* New London, Connecticut, *Mr. Roland!* Swamps of New Jersey, *Dr. Stuve*, ex *Nutt.* "On the high mountains of New York and Pennsylvania," *Pursh.* Bethlehem, Pennsylvania, *Schweinitz!* and near Westchester, *Mr. D. Townsend!* (the southern forms more luxuriant and corresponding with A. nudiflorus, *Nutt.*) Aug.–Sept.—Plant 1–3 feet high. Leaves numerous, 2–3 inches long, nearly equal in size to the summit of the stem, varying from half an inch to more than an inch in width, pinnately veined, rough, hairy on the veins beneath, often entire towards the base; the teeth sharp and salient, or sometimes rather obtuse, mucronate. Heads few, large (smaller than in A. spectabilis), 1–3 upon each branch of the simple corymb; the oval-oblong or linear oblong (often acutish) scales of the involucre with bright green, sometimes slightly spatulate tips, nearly glabrous except the margins. Rays numerous, elongated, pale violet; the disk yellow, turning brownish. Achenia narrowly oblong or fusiform, turgid, slightly compressed when mature. Pappus rather rigid; the longer bristles somewhat thickened near the apex.—The Pennsylvanian is larger than the Newfoundland plant, but otherwise they perfectly accord. We have gathered this species in the Berlin Botanic garden, under the name of Biotia commixta, var. stricta.

4. *A. biflorus* (Michx.): low; stems very simple, slender, bearing two (rarely a single) pedunculate heads at the summit; leaves broadly lanceolate, very acute, remotely [and sharply] serrate; scales of the appressed-imbricate involucre lanceolate [heads large]. *Michx.! fl.* 2. *p.* 115; *Nees, Ast. p.* 39. A. strictus, *Pursh, fl.* 2. *p.* 556, not of *Poir.*

Around lakes and rivers which flow into Hudson's Bay, *Michaux.* Labrador, and on high mountains of Pennsylvania, *Pursh.* Labrador, *Herb. Schweinitz!*—The following particulars are added by Pursh, whose Labrador plant (*Herb. Banks.*) is probably the same as Michaux's A. biflorus: Plant from 4 inches to a span high: leaves scabrous: flowers middle-sized;

the rays pale violet, disk brownish-yellow: scales of the involucre oblong, acute, nearly equalling the disk.—According to Nees, who examined a specimen in the Willdenovian herbarium, the stem is glabrous, and the closely imbricated scales of the involucre ovate-oblong, rather acute.—The specimen in the Schweinitzian herbarium resembles a very dwarf state of A. Radula, with which it accords in its pappus and narrow glabrous achenia; but the more membranaceous scales of the involucre are much fewer in number, acute, and nearly equal in length.

5. *A. montanus* (Richards.): rhizoma creeping; stems pubescent or villous below, tomentose and mostly corymbose at the summit, leafy; leaves oblong, serrate, veiny, somewhat hairy beneath, sessile; the lowermost somewhat spatulate, the upper lanceolate; scales of the campanulate-hemispherical involucre canescently tomentose, lanceolate, acute, unequal, closely imbricated in 3 or more series, with herbaceous spreading summits; rays narrow, numerous; achenia linear, elongated, many-ribbed, sparsely hirsute.—*Richards.! appx. Frankl. journ. ed.* 2. *p.* 32, not of *Nutt.* A. Richardsonii, *Spreng. syst.* 3. *p.* 528; *Nees, Ast. p.* 30; *Hook.! fl. Bor.-Am.* 2. *p.* 7; *DC. prodr.* 5. *p.* 229. A. Sibiricus, *Turcz.! in herb. Hook.*
β. giganteus: stem large and stout, more tomentose; leaves ample, more deeply and sharply serrate, pubescent-tomentose beneath.—A. Richardsonii *β.* giganteus, *Hook.! l. c.*
γ. arcticus: stems smaller, often simple and bearing a solitary head; scales of the more simple involucre fewer; the exterior more foliaceous and as long as the disk.—A. salsuginosus? *Less.! in Linnæa,* 6. *p.* 124. A. Espenbergensis, *Nees! Ast. p.* 36; *DC.! l. c.* A. Sibiricus, *Fischer! in herb. Hook.*
Barren country from lat. 64° to the Arctic Sea, *Richardson!* Rocky Mountains, *Drummond!* Also in Siberia (*Herb. Pall.* fide *Richards. & herb. Hook.!* ex *Turcz.*) *β.* Fort Franklin on the Mackenzie River, *Richardson!* *γ.* Kotzebue's Sound, &c. *Chamisso! Capt. Beechey!*—Stem varying from 5 inches to a foot or more (in *β.* 2 feet) in height, often branched at the base, usually simply corymbose at the summit: the tomentose erect peduncles thickened under the heads. Leaves 1 to 3 inches long, feather-veined, either obscurely or conspicuously serrate with pointed teeth. Heads as large as in A. alpinus: the involucre, in the fully developed states, broadly campanulate rather than hemispherical, at first about the length of the disk, but mostly shorter than the pappus; the exterior scales successively shorter and more herbaceous; the inner with purple summits; in *β.* all rather looser and less unequal; in *γ.* with the exterior more foliaceous and lax or bracteolate, equalling or exceeding the innermost, so as to resemble an Alpigenous Aster. Receptacle alveolate. Rays apparently purple, much longer than the disk; the corolla of the disk turning purple. Appendages of the style lanceolate-oblong, rather obtuse. Pappus copious, reddish-brown when old, unequal, some of the longest series slightly thickened at the summit. Achenia attenuated, strongly striate, sparsely hairy when mature.—A well-marked species, with the involucre of the section Amelli, and the achenia and pappus of Biotia, or of most species of Calliastrum; but in the extremely reduced arctic forms, the involucre simulates an Alpigenous Aster, which the larger states are very unlike, although an approach to this form is occasionally presented. The var. *β.* is a larger, coarser, and much more tomentose state, with the leaves often an inch and a half wide, resembling A. conspicuus, except as to pubescence.

6. *A. conspicuus* (Lindl.): stem stout, strict, corymbose at the summit; the branches erect, minutely pubescent, mostly leafless and bearing single heads; leaves oblong or broadly lanceolate, acute, serrate with coarse spreading teeth, slightly pubescent and scabrous, sessile; the lower narrowed at the

base; involucre hemispherical-campanulate, about the length of the disk; the scales numerous, unequal, glandular-puberulent, lanceolate, with acute herbaceous squarrose-spreading tips; rays numerous; achenia linear-oblong, silky-pubescent.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 7, & *in DC. prodr.* 5. *p.* 230.

Carlton House, on the Saskatchawan River (about lat. 53°), to the Rocky Mountains, *Drummond!*—A stout showy species, with ample thickish veiny leaves (4–6 inches long and 1–2 wide, the teeth triangular and mucronate or subulate-pointed), and heads fully as large as those of A. spectabilis, to which it bears considerable resemblance. Involucre and peduncles viscid with a minute glandular pubescence. Rays large, blue. Appendages of the style triangular-lanceolate. Bristles of the pappus slightly rigid, similar, and scarcely, if at all thickened upwards.

7. *A. spectabilis* (Ait.): stem strict, puberulent-scabrous, glandular-pubescent and corymbose at the summit; leaves oblong-lanceolate, scabrous, sessile, entire; the lower ones oblong, remotely appressed-serrate, tapering into a short margined petiole; branches of the corymb usually short and rigid, bearing 1–3 heads; involucre hemispherical-campanulate, as long as the disk; the scales very numerous, somewhat equal in length, linear-oblong and slightly spatulate, glandular-puberulent, somewhat ciliate, with conspicuous herbaceous squarrose-spreading (rather obtuse) tips; rays numerous (20 or more); achenia linear, slightly pubescent.—*Ait. Kew.* (*ed.* 1) 3. *p.* 209; *Pursh, fl.* 1. *p.* 554; *Nutt.! gen.* 2. *p.* 157; *Nees, Ast. p.* 42; *Lindl.! bot. reg. t.* 1527; *DC.! prodr.* 5. *p.* 230. A. grandiflorus, *Walt. Car. p.* 209. A. elegans, *Willd. spec.* 3. *p.* 2042, in part, fide *Nees*. A. speciosus, *Hornem. hort. Hafn.* 2. *p.* 816? fide *DC.*

β. flowering branches, or peduncles, few and slender, mostly simple, pilose with slender hairs as well as glandular-pubescent; leaves lanceolate, entire or scarcely serrate.

γ. branches of the corymb few and mostly simple; leaves obovate-oblong, often nearly all serrate.—A. spectabilis β. bellidifolius, *Nutt. l. c.?* A. surculosus? *Ell.! sk.* 2. *p.* 354.

Dry sandy soil and pine barrens, Massachusetts (New Bedford, *Mr. T. A. Green!*) and New Jersey! to Florida! and Kentucky! Sept.–Nov.—Rhizoma slender, creeping. Stem 1–2 feet high. Leaves 2–4 inches long (the upper ones smaller), half an inch to an inch in width, of a firm texture, acute or obtuse, mucronulate, sometimes obscurely 3-nerved. Branches of the corymb or peduncles with a few small leaves or bracts (the uppermost approximate to the head), usually short and rigid. Heads showy (larger than in A. Amellus); the scales of the involucre imbricated in several series; the exterior loose, clothed more or less with a glandular-scabrous pubescence similar to that of the branches. Rays very long, lanceolate, blue or violet. Appendages of the style lanceolate-subulate.—We have met with no authentic specimen of Mr. Nuttall's var. bellidifolius. Perhaps he had a form of the closely allied A. gracilis in view; since the latter is common in the pine barrens of New Jersey, while he only mentions it as a Western plant.

8. *A. gracilis* (Nutt.): stems several from the same often surculose caudex, slender, slightly pubescent, corymbose at the summit; leaves somewhat scabrous, remotely and obscurely crenulate-serrate; the radical ones oblong or spatulate, on slender naked petioles; the cauline oblanceolate or narrowly oblong, often narrowed at the base, slightly clasping; heads several, in a spreading corymb; involucre obconical, as long as the disk; the scarcely pubescent scales imbricated in several series, whitish and coriaceous, with herbaceous (obtuse or slightly pointed) spreading tips; the exterior succes-

sively shorter; rays about 12; achenia cuneiform-oblong, moderately compressed, minutely hairy.—*Nutt.! gen.* 2. *p.* 158.

Prairies of Kentucky & Tennessee, *Nuttall!* Pine barrens of New Jersey! common. Sept.—Caudex usually tuberous, producing runners and offsets. Stems about a foot high, not scabrous or glandular, leafy, either simple and bearing 5 to 9 heads in a terminal corymb (the central head almost sessile, the lateral on slender spreading or divaricate peduncles); or with corymbose flowering branches, each bearing 3 to 7 heads, all but the lateral or external on very short pedicels. Leaves 1 to about 2 inches long, nearly coriaceous, opaque, glabrous. Involucre almost exactly like Sericocarpus conyzoides! and about the same size; the exterior scales subspatulate-oblong or linear-oblong, somewhat ciliate; the innermost linear, membranaceous. Heads about 30-flowered. Rays violet; the ligules exserted about the length of the involucre. Achenia rather short, impressed-striate, clothed with short sparse hairs.—Mr. Nuttall has correctly remarked the alliance of this plant to A. spectabilis on the one hand (some forms of which it greatly resembles), and to Sericocarpus conyzoides on the other: it almost connects the latter genus with Aster.

9. *A. surculosus* (Michx.): stems several from the same surculose caudex, slender, simple, minutely pubescent above; leaves lanceolate, elongated, acute, glabrous, the margin scabrous, entire or with a few slight subulate teeth; the lowermost tapering into a margined somewhat sheathing petiole; the upper ones linear, partly sheathing or clasping at the base; heads 3–5 in a simple corymb (sometimes solitary); involucre turbinate-hemispherical, nearly as long as the disk; the scales numerous, somewhat equal in length, pubescent, with spreading herbaceous mostly mucronulate tips; the outermost lanceolate and chiefly foliaceous; rays numerous; achenia linear, almost glabrous.—*Michx. fl.* 1. *p.* 112; *Nutt.! gen.* 2. *p.* 157; *Nees, Ast. p.* 40; *DC. l. c.*

Woods, Burke County, N. Carolina, *Michaux.* Margins of open bushy swamps in Tennessee, N. Carolina! and Virginia, *Nuttall.* Wilmington, N. Carolina, *Nuttall! Mr. Curtis!* Southern States, *Mr. Croom!* Sept.—Rhizoma creeping. Stems somewhat angled, 6–18 inches high; the summit, peduncles &c. pubescent but not glandular. Leaves rather scattered, rigid, opaque (the lower obscurely 3-nerved), smooth and shining; the lower 4–6 inches long, lanceolate or spatulate-lanceolate; the cauline successively reduced to one or two inches in length, often narrowly lanceolate-linear; the uppermost confluent with the scales of the involucre. Heads as large as in A. spectabilis; the rays long, linear, violet. Exterior scales of the involucre loose, lanceolate; the others linear-spatulate or narrowly cuneiform, rigid, white at the base, the tips herbaceous, mucronulate; the innermost nearly membranaceous. Achenia striate, slender, somewhat compressed.—The dwarfish state of this species (which we believe to be Michaux's) approaches A. spectabilis, while the most slender forms considerably resemble the very different A. paludosus.

10. *A. paludosus* (Ait.): stem slightly puberulent or scabrous; leaves linear, entire, acute, rigid, partly clasping, with the margins scabrous, often fringed with bristly hairs near the base; heads few, racemose, or terminating the mostly simple axillary and somewhat racemose branches; involucre hemispherical, nearly the length of the disk, mostly bracteolate; the scales numerous, somewhat equal in length, partly foliaceous, lanceolate or spatulate-linear, mucronate, somewhat squarrose; rays numerous; achenia linear-oblong, nearly glabrous.—*Ait. Kew.* (*ed.* 1) 3. *p.* 201; *Pursh, fl.* 1. *p.* 547; *Ell. sk.* 2. *p.* 343. A. grandiflorus, *Nutt.! gen.* 2. *p.* 156; not of *Linn.* Tripolium paludosum, *Nees, Ast. p.* 155. Diplopappus paludosus, *Lindl.! in herb. Hook. &c.* Heleastrum paludosum, *DC.! prodr.* 5. *p.* 264.

Wet pine barrens and swamps, from North Carolina! to Florida! Louisiana! and Arkansas! Aug.–Oct.—Stems 1–2 feet high. Leaves coriaceous, somewhat erect, 2–4 inches long, 2–3 lines wide, pointed, strongly 1-nerved, or with 2 obscure lateral nerves; the uppermost often concave. Heads large (the disk half of an inch in diameter), usually 3 to 8 disposed in a somewhat racemose manner on short nearly naked peduncles, sometimes axillary on very short peduncles, forming a kind of spike; but the lower peduncles, or branchlets, often elongated, so as to become corymbose, or branching and paniculate. Exterior scales of the involucre usually loose and bracteolate, or passing into the bracteate leaves which subtend the head, almost entirely foliaceous, somewhat ciliate; the innermost with the tips only herbaceous, or sometimes colored. Rays (about 24) nearly an inch long, deep blue. Pappus tawny, rather rigid; the bristles unequal; the larger ones gradually thickened upwards so as to appear slightly clavate under a lens, but scarcely more so than in the preceding species. Achenia glabrous, or slightly pubescent when young, somewhat angled and striate, slender, scarcely compressed.—This species is, we believe, confined to the Southern States. Mr. Nuttall's A. paludosus is probably a form of our A. elodes. What can be the plant from Northern British America mentioned by Dr. Richardson under this name?

11.? *A. Curtisii:* smooth and glabrous; stem (apparently) simple, leafy, slightly corymbose or racemose at the summit; the branches short, rigid, bearing single or few heads; leaves lanceolate, sessile, attenuate-acute, serrate, with scabrous or somewhat ciliate margins; the lowermost tapering into a winged petiole; scales of the hemispherical involucre oblong or slightly spatulate, unequal, imbricated in about 4 series, coriaceous, with conspicuous abruptly foliaceous squarrose-reflexed summits; achenia narrow, glabrous.

On Table Mountain &c. N. Carolina, *Mr. M. A. Curtis!*—Stem strict, apparently 2 to 3 feet high, smooth throughout, leafy to the summit, with a few short spreading flowering branches, which bear single or 3–5 racemose heads; the lateral ones on short pedicels. Leaves somewhat membranaceous, tapering to a very acute point, entirely smooth on both sides, or slightly scabrous next the margins of the upper surface or near the apex, pale beneath, with rather prominent reticulated veinlets; all but the uppermost conspicuously but somewhat irregularly serrate, the base and apex entire; the lowermost (radical unknown) about 4 inches long and two thirds of an inch wide, narrowed rather abruptly into a margined or winged petiole, coarsely serrate; the upper similar, but narrower and less tapering at the base; the uppermost closely sessile, often entire; those of the branchlets minute and bract-like, thickish, obtuse. Heads about as large as those of A. spectabilis, subglobose. Scales of the involucre numerous, white and coriaceous below, appressed; the foliaceous summits (oval or lanceolate, often acute) abruptly squarrose or recurved, sometimes equal in length to the appressed portion. Rays large, 20 or more, blue or purple. Bristles of the pappus slender, rather soft, the inner series very obscurely thickened upwards.—We have but two specimens of this apparently well-marked species, collected we believe in different localities, neither of which are so perfect as could be desired. Perhaps it belongs to the Grandiflori, rather than to the present division.

§ 3. *Scales of the involucre imbricated in various degrees, with herbaceous or foliaceous tips, or the exterior entirely herbaceous: receptacle alveolate: rays numerous: appendages of the style lanceolate: bristles of the pappus capillary (soft) and nearly uniform, none of them thickened at the apex: achenia compressed.*—ASTER proper.

* *Heads (large) corymbose or racemose; scales of the involucre imbricated in several series, rigid, with herbaceous or foliaceous summits, somewhat squarrose or spreading; the innermost usually membranaceous: achenia broad, compressed, pubescent or hairy.*—Amelli.

12. *A. integrifolius* (Nutt.): stem simple, villous-pubescent, the summit and the simple corymb glandular and viscid; leaves oblong-lanceolate, acute, entire, 1-nerved, veiny; the radical and lowest cauline tapering into a margined petiole, almost glabrous; the others clasping, somewhat pubescent or glandular; heads few (3–5); scales of the involucre loosely imbricated in 2–3 series, lanceolate, acute, glandular, herbaceous, somewhat unequal; achenia minutely silky-hirsute.—*Nutt.! in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 291.

Rocky Mountains in lat. 42°, growing at a lower elevation than A. andinus or A. glacialis, *Nuttall!*—Plant 6–12 inches high, stout. Heads nearly the size of A. Amellus; to which this species more closely approaches than to any other. Leaves rather coriaceous, with a strong midrib (not triplinerved); the numerous reticulated veinlets somewhat conspicuous on both surfaces of the older leaves; the radical 3–5 inches long, including the petiole. Exterior scales of the involucre broadly lanceolate, entirely herbaceous, the margins not membranaceous; the innermost narrower, but similar, membranaceous at the base. Rays "bluish-purple, 15–25" (*Nutt.*), rather large. Pappus of unequal slightly rigid strongly scabrous bristles. Appendages of the style linear-lanceolate, hirsute.

13. *A. spathulatus* (Lindl.): stems low, bearing a few simple racemose branches; leaves narrowly spatulate, obtuse, entire, somewhat nerved, nearly glabrous; the uppermost lanceolate, dilated at the base and partly clasping, often acute; peduncles simple, nearly naked, tomentose-pubescent; scales of the involucre linear or oblong-linear, acute, pubescent, rather unequal, in 2–3 series, erect, with foliaceous somewhat spreading summits.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 8, *& in DC. prodr.* 5. *p.* 231.

Arctic America, at Bear Lake and Fort Franklin on the Mackenzie River, *Richardson!*—Plant 5–10 inches high, slightly pubescent with appressed hairs. Radical and lower leaves 2 to 3 inches long, 3–4 lines wide, of uniform appearance on both sides, often nearly linear; the lateral nerves somewhat reticulated. Heads few, about as large as in A. Amellus. Achenia hairy, compressed.

14. *A. adscendens* (Lindl.): stems low ascending; the branches simply racemose or somewhat corymbose; radical and lower leaves oblong-linear or narrowly spatulate, glabrous, entire, with ciliate-scabrous margins; the cauline linear-lanceolate, partly clasping; scales of the hemispherical involucre numerous, closely imbricated, unequal, nearly glabrous; the exterior linear-oblong, obtuse, the innermost acute; achenia minutely hairy.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 8, *& in DC. prodr.* 5. *p.* 231.

β. denudatus: leaves more strongly ciliate-scabrous; the radical and lowermost somewhat fringed towards the base; the cauline small.—A. denudatus, *Nutt.! in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 292.

γ. ciliatifolius: stem not denuded and scapiform, pubescent above; leaves more proportionate, distinctly ciliated; scales of the involucre ciliate, somewhat acute.—A. denudatus *β.* ciliatifolius, *Nutt. l. c.*

Banks of the Saskatchawan towards the Rocky Mountains, *Drummond!* *β.* & *γ.* Arid and dry grassy plains in the Rocky Mountains near Lewis River, about lat. 42°, *Nuttall!*—Rhizoma creeping. Stems 8 to 16 inches high, bearing several racemose or somewhat paniculate-corymbose heads, which are smaller than in A. Amellus. Leaves rigid, the lowermost 2–4 inches long, slightly veined when old, tapering into a margined petiole, which is rather strongly ciliate in var. β.; the margins frequently somewhat undulate or remotely denticulate. Involucre equalling or rather shorter than the disk, composed of numerous scales somewhat closely imbricated in several series, rather rigid, often ciliate; the exterior shorter, almost wholly herbaceous; the inner with more acute slightly spreading herbaceous summits. "Rays rose-purple, 30–40, *Nutt.*" Achenia rather broad, compressed, narrowed at the base as if slightly stipitate, 4-nerved, resembling those of A. Amellus, but smaller and minutely hairy. Pappus brownish.—The description of the achenia is drawn from var. β., which differs from Dr. Lindley's plant only in the particulars mentioned above.

15. *A. Chilensis* (Nees): stem racemose-decompound, hairy above in lines; the heads somewhat corymbose or racemose at the summit of the branches; leaves lanceolate, acute, crenate-serrate, clasping, scabrous on both sides; those of the peduncles small, oblong, squarrose; scales of the broadly obovate involucre closely imbricated, oblong, with obtuse spatulate herbaceous summits; achenia pubescent-hirsute when young. *Nees, Ast. p.* 123*; DC. prodr.* 5*. p.* 245. A. Radula, *Less. in Linnæa,* 6*. p.* 125.

β. leaves scarcely scabrous, except near the margins of the upper surface; the cauline narrowed towards the base, partly clasping.—A. spectabilis? *Hook. & Arn.! bot. Beechey, p.* 146.

California, *Chamisso.* β. Monterey, California, *Capt. Beechey!*—The plant collected in Capt. Beechey's voyage is smoother than that described by Nees, but it accords in other respects. It is possible that the specimen of Hænke was also collected in California, instead of the mountains of Chili; as great confusion with regard to the localities is said to exist in his collections. It has certainly much affinity with the Concinni, where Nees places it, but apparently more with the Amelli. The heads are rather smaller than in A. Amellus; the herbaceous tips of the involucral scales are loose or somewhat spreading, with a slight membranaceous margin, somewhat ciliate, otherwise glabrous; the innermost about the length of the disk, rather acute. Young achenia compressed, clothed with a somewhat silky pubescence.

* * *Heads (large) subglobose, terminating the leafy branches: scales of the involucre (rather few and large), somewhat equal in length, imbricated in* 3 *or* 4 *series, foliaceous, except the base, and nearly similar to the (small) oval or lanceolate, usually silky, sessile and entire mucronate leaves, both sides of which are similar in appearance: achenia glabrous, angled or compressed, many ribbed.*—Sericei.

16. *A. sericeus* (Vent.): stems slender, numerous from the same root, glabrous below, branched; leaves silvery-canescent on both sides with a dense appressed silky pubescence, lanceolate or oblong, closely sessile, mucronulate, obscurely 3-nerved; heads mostly solitary terminating the short canescent branchlets; scales of the involucre similar to the uppermost leaves, silvery, squarrose-spreading, the coriaceous base appressed; achenia many-ribbed, glabrous.—*Vent. hort. Cels. t.* 33*; Pursh! fl.* 2*. p.* 548*; Nutt.! gen.* 2*. p.* 155*; Nees, Ast. p.* 51*; DC.! prodr.* 5*. p.* 233. A. argenteus, *Michx.! fl.* 2*. p.* 111.

β. leaves and scales of the involucre rather narrowly lanceolate, less silvery.—A. montanus, *Nutt.! gen. l. c.*

Prairies and dry banks of rivers, nearly confined to the valley of the Mississippi and its tributaries: Arkansas! Mississippi! Missouri! Illinois! to Wisconsin! N. W. Territory! Tennessee and N. Carolina near the mountains, *Nuttall!* (var. β.) *Schweinitz!* Aug.–Oct.—Plant 10–20 inches high (said to become a little shrubby at the base by cultivation in Europe), very elegant; the densely silvery-canescent leaves half an inch to an inch long, crowded on the branches; the radical ones oblanceolate, sessile, about 3 inches long, distinctly 3-nerved. Heads showy, but variable in size. Rays 20–25, half an inch or more in length, deep violet-blue. Achenia evidently compressed when mature. Pappus tawny, equal.

17. *A. phyllolepis:* stems slender, loosely branched; leaves erect, lanceolate, closely sessile, mucronulate, somewhat hairy or canescent when young; those of the branches crowded, ovate-lanceolate, acuminate-cuspidate, appressed, ciliate with long spreading hairs; heads mostly solitary terminating the branchlets; scales of the involucre similar to the upper leaves, loosely imbricated in 2–3 series, glabrous except the fringed margins, reticulated, conspicuously acuminate-mucronate, nearly equal in length; achenia linear, angled, striate or ribbed, glabrous.—A. sericeus β. microphyllus, *DC. l. c.?* A. ciliatus, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 295, not of *Walt.*

Texas, *Berlandier? Drummond!* Western Louisiana, *Dr. Leavenworth! Dr. Hale!*—Plant 10–18 inches high, with virgate somewhat pubescent or hairy branches. Leaves coriaceous, pale, scabrous, somewhat 3-nerved, obscurely reticulated, gradually reduced in size from an inch or more to 4–5 or 6 lines in length; the upper ones more crowded, evidently reticulated, and conspicuously ciliate with long spreading hairs, which are, however, somewhat deciduous. Scales of the hemispherical involucre oval or ovate, or the innermost lanceolate, few, as long as the disk. Heads as large as in the preceding, or sometimes smaller. Rays about 25, elongated, purple. Achenia scarcely compressed. Pappus nearly equal, reddish-brown.

* * * *Heads* (*middle-sized*) *racemose; scales of the turbinate or obovoid involucre imbricated in several series, rather rigid, silky, the exterior successively shorter, all with short herbaceous tips: corolla of the disk as well as the* (12–15) *rays purple or violet: achenia silky-villous: leaves small, lanceolate or oblong, entire, closely sessile, pale, when young canescent, of the same color and appearance both sides.*—Concolores.

18. *A. concolor* (Linn.): stem simple or sparingly branched, virgate; leaves crowded, oblong-lanceolate, mucronulate, minutely silky both sides, or sometimes nearly glabrous when old; the upper ones acuminate-mucronate, appressed; heads in a simple or compound virgate raceme; scales of the involucre lanceolate, acute, somewhat appressed; achenia silky-villous. —*Linn.! spec.* (*ed.* 2) 2. *p.* 1228; *Walt.! Car. p.* 209; *Michx.! fl.* 2. *p.* 111; *Willd. spec.* 3. *p.* 2029; *Pursh! fl.* 2. *p.* 448; *Nutt.! gen.* 2. *p.* 115; *Ell.! sk.* 2. *p.* 350; *Nees, Ast. p.* 115; *DC.! prodr.* 5. *p.* 243. A. caule simplicissimo, &c. *Gronov.! fl. Virg. ed.* 2. *p.* 123. A. foliis lanceolatis sessilibus alternis, &c. *Gronov.! l. c. p.* 125.

Dry sandy soils, and in pine barrens, New Jersey! to Florida! and Louisiana! Aug.–Nov.—Plant 1–3 feet high, with somewhat the habit of a Liatris, sometimes with a tuberous root, often simple or branched only towards the base, and bearing the heads in a long virgate raceme, on short (erect or recurved) peduncles, which are furnished with minute bract-like leaves, frequently branching above and bearing several shorter racemes or sometimes solitary heads. Leaves 1–3 nerved, often obscurely reticulated, rather rigid, grayish; the lower about an inch long, and partly clasping; the upper successively reduced in size, oval or lanceolate, mucronate or cuspidate. Pappus rusty or reddish.

19. *A. Menziesii* (Lindl.): leaves, as well as the stem, canescent with a somewhat scabrous pubescence, lanceolate or oblong-linear, closely sessile, acute; heads racemose; scales of the involucre obtuse, somewhat squarrose. —*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 12, *& DC. prodr.* 5. *p.* 243.

Oregon, *Menzies!*—Leaves all slightly auriculate and clasping at the base; the lowermost oblong-spatulate; the upper lanceolate-linear, all strongly 1-nerved. Peduncles or branches several, simple, or sometimes forked, almost tomentose. Immature achenia canescent. Pappus rusty.—We have only seen the single specimen in Sir Wm. Hooker's herbarium: we doubt if it be so nearly allied to A. concolor as is supposed.

* * * * *Heads (middle-sized, large for the size of the leaves) solitary terminating the numerous diffuse branchlets: scales of the obovoid-turbinate involucre closely imbricated in several series (the exterior successively shorter), coriaceous, spatulate-linear, with short herbaceous slightly squarrose or spreading tips: achenia short, turbinate, minutely canescent: leaves crowded throughout the slender stem and branches, very short and uniform (except the very lowest), thick, hispid-scabrous, ovate-oblong or lanceolate, either appressed or squarrose-reflexed.*—Brachyphylli.

20. *A. squarrosus* (Walt.): stems minutely hispid, diffusely branched; the branchlets short, somewhat paniculate or racemose; leaves triangular-ovate or oblong, mucronulate, squarrose-reflexed.—*Walt.! Car. p.* 209; *Michx.! fl.* 1. *p.* 112; *Willd.! spec.* 3. *p.* 2028; *Pursh, fl.* 1. *p.* 547; *Ell.! sk.* 2. *p.* 530; *Nees, Ast. p.* 115; *DC.! prodr.* 5. *p.* 243.

Dry soil, N. Carolina! S. Carolina! Georgia! and Florida! Sept.–Nov. —Stems (suffruticose at the base?) about 2 feet high; the branches often virgate. Leaves somewhat fleshy and rigid; the radical ones obovate-oblong, sessile, nearly an inch long; the cauline nearly uniform, crowded so as often to appear imbricated downwards, usually 2–3 lines long, minutely hispid, especially on the margins. Involucre one-third to nearly half an inch in diameter; the scales scabrous-puberulent, coriaceous and whitish, except the oval mucronulate spreading foliaceous tips. Rays 15–20, lanceolate-linear, large and showy, bright blue. Pappus brownish when old.

21. *A. adnatus* (Nutt.): minutely hispid-scabrous throughout; ascending stems and branches virgate; leaves ovate-lanceolate or oblong, mucronulate, almost imbricated, appressed, adnate to the stem!—*Nutt.! in jour. acad. Philad.* 7. *p.* 82; *Hook.! compan. to bot. mag.* 1. *p.* 97. A. microphyllus, *Torr.! ined.*; *Lindl.! in DC. prodr.* 5. *p.* 244, (badly described.)

Dry soil, Florida, *Nuttall! Dr. Alexander! Dr. Chapman!* Alabama, *Dr. Gates!* New Orleans, *Drummond!* Sept.–Nov.—Resembles the preceding; the heads and flowers similar. Stems suffrutescent at the base, with loose virgate branches, clothed with the minute leaves (1–3 lines long) quite to the summit. The leaves are coherent to the stem and branches by the midrib, the summit only being free; they are more finely scabrous than in A. squarrosus: the very lowest, which are about three-fourths of an inch long, are nearly or quite free. Rays 'pale lilac' (*Nutt.*), or rather violet-blue.

* * * * * *Heads (rather large) mostly solitary terminating the spreading branchlets: scales of the obovoid-turbinate or somewhat campanulate involucre closely imbricated in several series, rigid, with herbaceous mostly acute and somewhat spreading tips, the exterior successively shorter: achenia linear-oblong, many-striate, silky-canescent: leaves auriculate-cordate and clasping the stem, entire, pubescent or scabrous; those of the branchlets very small.*—Patentes.

22. *A. patens* (Ait.): stem pubescent; paniculate at the summit; leaves ovate-oblong or oblong-lanceolate, pubescent or scabrous, with ciliate and very scabrous (often undulate or almost serrulate) margins, sometimes narrowed below the middle, auriculate-cordate and clasping; those of the spreading or divaricate slender branchlets very small; heads mostly solitary on the branchlets; scales of the involucre lanceolate, scabrous-puberulent;

achenia silky.—*Ait. Kew.* (*ed.* 1) 3. *p.* 201; *Pursh! fl.* 2. *p.* 551; *Nees, Ast. p.* 49 (excl. syn. *Michx.*); *Darlingt.! fl. Cest. p.* 463; *DC.! prodr.* 5. *p.* 232. A. undulatus, *Linn.! spec. ed.* 2. *p.* 1228, *& herb.* (not of *hort. Cliff.!*); *Ell.! sk.* 2. *p.* 361. A. amplexicaulis, *Michx.! fl.* 2. *p.* 114; *Bigel.! fl. Bost. ed.* 2. *p.* 312.

β. *gracilis:* heads smaller, terminating the very numerous and elongated branches; leaves very small, rigid, scabrous.—*Hook.! compan. to bot. mag.* 1. *p.* 97.

γ. *patentissimus:* heads large, terminating the elongated branchlets; the scales of the more turbinate involucre very numerous and more closely imbricated (in 5–6 series), somewhat canescent, the exterior broader and more obtuse; leaves rigid, hirsute-scabrous.—A. patentissimus, *Lindl.! in DC. l. c.* A. Arnottii, *Nees! in herb. Arn. & herb. Hook.*

δ. *phlogifolius:* stem simple or paniculate at the summit; the heads (large) solitary, or frequently several and somewhat racemose on the short branches; involucre more lax and herbaceous (imbricated in 3–4 series); leaves much larger, membranaceous, pubescent beneath, scarcely or not at all scabrous, lanceolate or oblong-lanceolate, tapering to an acute point, usually contracted below the middle.—*Nees, Ast. l. c.* (excl. syn. *Michx.*); *Darlingt.! fl. Cest. l. c.* A. phlogifolius, *Muhl.! in Willd. spec.* 3. *p.* 2034; *Pursh! fl.* 1. *p.* 550; *Nutt.! gen.* 2. *p.* 156; *DC.! l. c.* A. auritus, *Lindl. in DC. l. c.?*

Dry soil, Massachusetts! to Florida! and Louisiana! β. Alabama, *Dr. Gates!* Louisiana and Texas, *Drummond!* γ. Kentucky! and Missouri! to Arkansas! and Western Louisiana! δ. Woods, New York! Pennsylvania! and Ohio! to Kentucky! and North Carolina! Aug.–Oct.—Stem rather slender, 1–3 feet high. Heads rather large and showy (in β. less, in γ. & δ. usually more than half an inch in diameter), commonly terminating the elongated and diverging branchlets; which are furnished with numerous minute and bract-like leaves. Rays purplish-blue, about 24. Scales of the involucre minutely pubescent or hairy, more or less granulose-scabrous under a lens; the innermost linear, acute or acuminate (sometimes purplish); the exterior shorter and more obtuse. Pappus ferruginous or tawny.—The scales of the involucre in var. γ. are more numerous and imbricated; and in the plant of Drummond from St. Louis (A. Arnottii, *Nees. ined.*) they are broader, more obtuse, and remarkably appressed: other specimens of this variety (A. patentissimus, *Lindl. in herb. Torr.*, which however have the leaves very scabrous on both sides) pass insensibly into the ordinary state of the plant.—The lower leaves, except in var. δ., rarely exceed one or two inches in length, and are mostly obtuse, but mucronate. In that plant, however, they vary from 3 to 6 inches in length, usually tapering to each end, but are dilated and auriculate at the base; they occasionally present a few remote serratures. We were strongly disposed to consider it a distinct species; but are now convinced by the examination of numerous intermediate forms, that it is a state which the plant assumes in shady moist places.

* * * * * * *Heads* (*middle-sized, showy*) *paniculate or somewhat racemose; scales of the turbinate or obovoid involucre closely and regularly imbricated in several series* (*the exterior successively shorter*), *chartaceous and white* (*except the midnerve*), *with very short appressed or slightly spreading green tips: rays bright blue: achenia very smooth and glabrous* (*or sometimes minutely pubescent with sparse hairs*), *broadish, compressed, 2–5-ribbed or nerved: plant perfectly smooth and glabrous* (*except the branchlets and the scabrous margins of the leaves*), *often glaucous: cauline leaves lanceolate or oblong-ovate, thickish, sessile or clasping, entire or sparingly serrate; the radical ovate or oblong* (*small*), *tapering into a short and margined often ciliate petiole.*—Concinni, *Nees,* (excl. spec.)

23. *A. lævis* (Linn.): very smooth, often glaucous; stem loosely paniculate or somewhat corymbose at the summit; leaves lanceolate, ovate-lanceolate, or oblong, coriaceous, very smooth, with scabrous margins, entire or sparingly serrate; the lower narrowed towards the base, or tapering into a margined petiole; the upper clasping and mostly somewhat auriculate or cordate at the base; those of the branches very small; scales of the obovoid involucre closely imbricated, appressed, rigid, lanceolate or broadly linear, with short abruptly acute or acuminate herbaceous tips; achenia shining, glabrous, or pubescent with a few scattered hairs.—*Linn.! spec.* 2. *p.* 876; *Ait. Kew.* (*ed.* 1) 3. *p.* 206; *Lindl. bot. reg. t.* 1500; *Darlingt.! fl. Cest. p.* 468. A. lævis, lævigatus, mutabilis, amplexicaulis, rubricaulis, & cyaneus, *Nees, Ast. p.* 128–132; *DC. prodr.* 5. *p.* 245 & 246. A. rubricaulis, *Lam. dict.* 1. *p.* 305. A. amplexicaulis, *Muhl.! in Willd. spec.* 3. *p.* 2046. A. Pennsylvanicus, *Poir. suppl.* 1. *p.* 498, ex *Nees.*

β. more glaucous; upper leaves cordate-clasping, oblong-lanceolate or ovate-lanceolate; scales of the involucre more numerous.—A. cyaneus, *Hoffm. phytogr. bl. p.* 71, *t. B. f.* 1; *Pursh, fl.* 2. *p.* 550; *Nees, l. c.*; *Lindl. bot. reg. t.* 1495. A. glaucus & A. politus, *Nees, synops. p.* 23. A. bupleurifolius, *Hort. Monsp.*

γ. leaves elongated lanceolate or linear-lanceolate.—A. lævigatus, *Willd. spec.* 3. *p.* 2046?

Borders of woodlands and thickets, Canada! to Georgia! Missouri! and Saskatchawan! common. Aug.–Oct.—A beautiful species, readily recognized (notwithstanding some diversities in the foliage and the size of the heads) by its polished and more or less glaucous stem and leaves (the former 2–3 feet high, often purple); the somewhat coriaceous regularly imbricated and appressed scales of the involucre, which are white (slightly ciliate), with a greenish midnerve, and short rhombic green tips; the heads middle-sized or rather large; and the numerous showy rays bright blue or indigo, changing to violet. The flowers of the disk usually change to purple: the pappus becomes tawny or brownish. We entirely agree with Dr. Darlington in the opinion that it is vain to separate the various forms of this plant into several species. The large suite of specimens before us have been named for the most part by several distinguished botanists, whose determinations so seldom accord that we feel the greater confidence in our own opinion. We can make nothing of the characters derived by Nees from the alveoli of the receptacle, whether naked, ciliolate, or piliferous. The radical leaves are ovate, oval, or spatulate-oblong, serrate, on winged petioles which are usually ciliate at the base; the earliest smaller, more rounded or obtuse, crenate-serrate; the cauline vary from 2 to 5 inches in length, and one-third to an inch and a half in width, the broader ones often abruptly narrowed at the base; the upper surface shining; the reticulations loose and manifest. Branches of the inflorescence rather rigid, loose, few or numerous; the leaves gradually reduced to short lanceolate bracts.

24. *A. virgatus* (Ell.): very smooth; stem strict; the branches few and virgate, racemose at the summit; leaves linear-lanceolate, entire, with scabrous or ciliolate-serrulate margins, partly clasping; those of the branches very small and numerous, erect, subulate-acuminate; the lowermost tapering at the base; the radical spatulate-oblong; scales of the somewhat hemispherical involucre lanceolate, acuminate; the exterior loose or slightly squarrose-spreading; achenia glabrous.—*Ell.! sk.* 2. *p.* 353.

β. stem stout; the virgate branches numerous, somewhat compound; heads larger; lower cauline leaves oblong-lanceolate.

γ. stems slender, often simple; cauline leaves elongated linear-lanceolate, the margins more strongly ciliolate-scabrous.—A. attenuatus, *Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 97.

Western districts of Georgia, *Elliott!* *β.* Georgia, *Dr. Boykin!* *γ.* Jacksonville, Louisiana, *Drummond!* Western Louisiana, *Dr. Hale!* Sept.–Oct.—Resembles considerably the narrow leaved forms of A. lævis; but is distinguished by the virgate branches and racemose inflorescence; the scales of the involucre with sharper spreading points, the exterior often loose and passing into the very small bract-like leaves; which are usually numerous or crowded on the branches, varying from 3 to 6 lines long, rigid, subulate-acute or acuminate. Lower leaves 3 to 5 or 6 inches long, 3 to 4 (or in *β*. 5–10) lines wide, shining above, coriaceous. The plant of Elliott is intermediate between our specimens from Dr. Boykin (which has shorter and broader cauline leaves, the lower occasionally serrulate) and those of A. attenuatus, *Lindl.* Drummond's specimens are remarkably slender, and about 2 feet high. In those from Dr. Hale, the margins of the leaves are still more strongly serrulate-scabrous, or the uppermost even minutely ciliate-hispid, and the heads are more obconical. Rays apparently deep blue.

25. *A. concinnus* (Willd.): stem nearly glabrous, somewhat corymbose, loose; the branches virgate, dichotomous-paniculate; leaves lanceolate, partly clasping, remotely and sharply serrate, with scabrous margins, those of the branchlets oblong, entire; scales of the involucre linear, acute, closely imbricated. *Nees.—Willd. enum.* 2. *p.* 884; *Nees, Ast. p.* 121; *Lindl. bot. reg. t.* 1619; *DC. prodr.* 5. *p.* 245 (excl. syn. *Colla, hort. Ripul.*); *Hook. fl. Bor.-Am.* 2. *p.* 13? A. cyaneus? *Ell.! sk.* 2. *p.* 244.

β. branches more strict and racemose, with smaller and more numerous leaves. *Nees, l. c.*

North America, *Willdenow.* (In fields and woods, New York & Pennsylvania, *Pursh.*) N. Carolina, *Schweinitz!* (in *herb. Ell.*) Florida, *Mr. Read!* (in *herb. acad. Philad.*) Saskatchawan, *Drummond*, ex *Lindl.!* Sept.–Oct.—We have copied the specific character from Nees, having seen no indigenous specimens which altogether accord with the plant cultivated in the Berlin Botanic garden (from which Willdenow described the species) and elsewhere: the fragment from Saskatchawan (in *herb. Hook.*) is not satisfactory, and may belong to A. lævis. But Elliott's A. cyaneus? (judging from an imperfect specimen) appears to be the same as the cultivated A. concinnus: the upper cauline leaves are linear-lanceolate, and those of the numerous diverging branches narrowly linear; the heads rather smaller than in most forms of A. lævis; and the young achenia are minutely puberulent. The specimen from Florida clearly belongs to the same species; but in its more strict branches and racemose heads it accords with the description of A. concinnus *β*., *Nees*; and the leaves of the branches are also rather slender and narrowly linear. The rays are blue, and the flowers of the disk change to purple.—We know not from what source the original A. concinnus was derived. Willdenow compares the leaves with those of Phlox maculata; and the stem is said to be one and a half to two feet high.

26. *A. turbinellus* (Lindl.): stem and slender paniculate branches smooth or minutely puberulent-scabrous; leaves lanceolate, smooth, entire, with ciliolate-scabrous margins, tapering to each end, acute, slightly clasping; those of the filiform branchlets subulate; involucre clavate-turbinate, as long as the disk; the scales imbricated in numerous series, linear, obtuse, concave, herbaceous merely at the tips; achenia minutely puberulent-scabrous (under a lens).—*Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 98, *& in DC. prodr.* 5. *p.* 244.

St. Louis, Missouri, *Drummond!* Louisiana, *Dr. Leavenworth!*—Stem apparently 2–3 feet high, often very much branched in a corymbose-paniculate manner; the branchlets rather numerous, lax, very slender, racemose or slightly paniculate, terminated by middle-sized heads. Lower leaves about 3 or 4 inches long, rather opaque, pale, sparingly reticulate-veined, or obscurely 3-nerved, tapering to an acute point, the margin upwardly almost serrulate-scabrous; those of the branches and branchlets gradually reduced to subulate bracts resembling the exterior scales of the involucre. Rays about 20, elongated, blue or purple? Disk about 20-flowered. Achenia glabrous to the naked eye, but clothed with a very minute appressed pubescence under a lens. Pappus reddish-brown, not exceeding the innermost scales of the involucre.—A very distinct species, remarkable for its exactly turbinate involucre (5–6 lines long), which is very acute at the base, owing to the short exterior scales: these are coriaceous and white, with very short greenish tips.

* * * * * * * *Heads (middle-sized or small) paniculate or racemose: scales of the obovoid or campanulate involucre imbricated in several series (the exterior successively shorter), commonly appressed, chartaceous or somewhat membranaceous, with short green tips: achenia glabrous or slightly pubescent: radical and lowest cauline leaves (large) cordate, with elongated naked or margined petioles; the upper often petioled.*—Heterophylli, *Nees.*

† Leaves entire, undulate, or slightly serrate: heads loosely paniculate or racemose: rays usually bright blue or violet.

27. *A. azureus* (Lindl.): stem somewhat scabrous, racemose-compound at the summit; the branches slender and rigid; leaves scabrous; the radical and lowest cauline ovate-lanceolate or ovate-oblong, cordate, somewhat serrate, on long (naked or margined) often hairy petioles; the others lanceolate or linear, acute at each end, sessile, mostly entire; those of the spreading branches subulate, mostly very numerous and appressed; involucre broadly obconic, nearly the length of the disk; the scales closely imbricated, narrowly-oblong or linear, abruptly acute; achenia glabrous or very slightly and sparsely hairy.—*Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 98, *& in DC. prodr.* 5. *p.* 244. A. Oolentangiensis, *Riddell! synops. fl. Western States, p.* 55.

Woods and prairies, of the Western States; from Western Louisiana, *Dr. Leavenworth! Dr. Hale!* Missouri, *Drummond!* Makato River (a tributary of St. Peter's), *Mr. Nicollet!* to Ohio, *Dr. Riddell! Dr. Paddock! Dr. Van Cleve!* and Fort Gratiot, Michigan, *Dr. Pitcher!* Also Georgia, *Dr. Chapman!* (a variety with more lax branches.) Aug.–Oct.—Stem 1–3 feet high, rigid. Heads equalling or sometimes exceeding those of A. undulatus in size; the involucre between hemispherical and turbinate, nearly as broad as long, and rather shorter than the pappus; the scales numerous, appressed, white except the green rhombic or triangular tips, slightly pubescent. Rays blue.—A well-marked species ("appearing as if a hybrid between A. rubricaulis and A. multiflorus," *Lindl.*, who described from imperfect specimens, wanting the lower leaves), manifestly connecting this group with the foregoing, with which it exactly accords in its involucre &c., remarkable for its scabrous leaves; the lower 3–5 inches long (sometimes hairy beneath); those of the branchlets reduced to short subulate bracts. The inflorescence usually consists of a few racemose rigid (although slender) branches, somewhat paniculate at the summit of the stem; but in some large specimens from Dr. Leavenworth, the stem is much racemose-compound, the rigid primary branches often more than a foot in length; and these, with the racemose branchlets, all terminated by single heads and clothed with uniform very short subulate leaves, so different from those of the stem, present a very marked appearance.

28. *A. Shortii* (Hook.): stem slender, nearly glabrous, racemose-paniculate at the summit; leaves glabrous and nearly smooth above, minutely pubescent beneath, lanceolate or ovate-lanceolate, tapering to a sharp point; the radical and cauline ones all more or less cordate and on naked (some-

what hairy) petioles, entire or sparingly serrate, the veins loosely reticulated beneath; those of the short pubescent branches small and sessile; heads numerous and rather crowded; involucre campanulate, shorter than the disk; the scales closely imbricated, lanceolate-linear, rather obtuse; achenia glabrous.—*Hook.!* (*& Lindl.!*) *fl. Bor.-Am.* 2. *p.* 9 (note); *Riddell! synops. l. c.*

Cliffs and banks of streams, throughout Kentucky, *Dr. Short! &c.* and Ohio, *Dr. Riddell! Mr. Sullivant! Dr. Paddock! &c.* Mountains of Georgia, *Mr. Buckley!* Arkansas, *Nuttall!* Sept.–Oct.—A beautiful species (deservedly dedicated to the well-known botanist who has so greatly contributed to our knowledge of the plants of the Western States), 2 to 4 feet high, remarkable for its lanceolate-cordate, petioled, often slightly falcate, rather membranaceous leaves; which vary from 3 to 5 inches in length, smooth and somewhat shining above, pale and puberulent (but scarcely, if at all scabrous) beneath; the lower ones often serrate or toothed towards the base; those of the branches oval or oblong, of the ultimate branchlets or peduncles minute and subulate. Heads showy (usually larger than in A. undulatus), racemose at the summit of the stem or on the short branches, often forming a thyrsus. Scales of the involucre appressed, minutely pubescent, whitish, with oblong green tips. Rays violet-blue, lanceolate: disk yellow, changing to purple. Pappus brownish or tawny.

29. *A. undulatus* (Linn., Ait.): pale with a close and cinereous often scabrous pubescence; stem paniculate or racemose-thyrsoid at the summit; leaves ovate or ovate-lanceolate, somewhat tomentose-pubescent beneath and scabrous above, acute, with the margins often undulate or slightly crenate-serrate; the radical and lowest cauline cordate, on slender slightly margined petioles, which are usually dilated and clasping at the base; the others abruptly contracted into a short broadly winged clasping petiole; the uppermost cordate-clasping; those of the branchlets lanceolate or subulate; involucre obovoid, nearly the length of the disk; the scales linear, mostly acute, pubescent, closely imbricated; achenia slightly pubescent, or at length glabrous.—*Linn. hort. Cliff. p.* 408, *& spec.* (*ed.* 1) 2. *p.* 875? (not of *ed.* 2.); *Ait. Kew.* (*ed.* 1) 3. *p.* 206; "*Hoffm. phytogr. bl. p.* 77. *t. C. f.* 1;" *Pursh, fl.* 2. *p.* 551; *Nees, Ast. p.* 57; *Darlingt.! fl. Cest. p.* 464. A. diversifolius, *Michx.! fl.* 2. *p.* 113; *Ell.! sk.* 2. *p.* 361; *Bigel.! fl. Bost. ed.* 2. *p.* 312; *DC.! prodr.* 5. *p.* 234. A. paniculatus, *Nutt.! gen.* 2. *p.* 156, not of *Ait.* A. sagittifolius & A. scaber, *Ell.! l. c.* A. patens, *Bart. compend. fl. Phil.* 2. *p.* 113. A. heterophyllus γ. *Nees, Ast. p.* 55? A. autumnalis & A. heteromallus, *Wender.*? ex *Nees.* (The leaves vary in size, from 1 to 3 or 4 inches; in shape from broadly ovate to nearly lanceolate, the radical often obtuse, the primordial roundish; and in pubescence, being sometimes minutely and softly tomentose on both surfaces, and frequently scabrous beneath as well as above.)

β. stem strict; panicle simple; the heads rather larger; cauline leaves elongated oblong or lanceolate.

Dry woodlands, nearly throughout the United States! β. Kentucky, *Dr. Short!* Sept.–Oct.—Stem 1–3 feet high, often purplish; the flower-branches spreading, rather rigid, with very small (often subulate) leaves. Radical and lower leaves remotely crenate or serrate, or, like the upper, merely undulate. Heads middle-sized, loosely disposed on the branches in a somewhat racemose manner, often unilateral, all pedicellate; or rarely somewhat glomerate. Scales of the involucre nearly membranaceous, with oblong or somewhat lanceolate green tips, acute or acuminate, ciliate. Rays pale violet-blue: disk yellow turning purple. Pappus becoming tawny or brownish.—That the var. β. is merely a peculiar state of this species, is evident from connecting specimens. The original A. undulatus (*Linn. hort. Cliff.!*) is not A. patens, but we believe belongs to this species, which must in any case retain the name, as it is employed in the Hortus Kewensis, where the two species are first distinguished, anterior to Michaux.

30. *A. asperulus:* somewhat scabrous-pubescent; stem simple, racemose-paniculate at the summit; leaves sparingly and slightly serrate; the radical oblong-ovate, obtuse, mostly subcordate, on slender naked or margined petioles; the cauline oblong or spatulate, narrowed at the base, or the lowest on winged petioles, not dilated at the insertion, those of the branchlets minute, scattered; heads (small) loosely paniculate; scales of the somewhat hemispherical involucre oblong, acute, closely imbricated, shorter than the disk; achenia very minutely pubescent.

New Orleans, *Drummond!* Georgia, *Baldwin!*—Plant 1–2 feet high, pale with a close somewhat scabrous pubescence. Radical and lowest cauline leaves obtuse or slightly cordate at the base, on slender petioles; the others sessile, 1 to 3 inches long, mostly acute, somewhat serrate towards the apex, more or less scabrous above and pubescent beneath, tapering below, but not dilated at the base. Heads nearly as large as in A. undulatus; the scales of the involucre fewer, slightly pubescent, appressed, with rhomboid green tips. Rays blue or purple?

† † **Lower leaves conspicuously serrate: heads usually small, racemose or somewhat thyrsoid: rays commonly pale blue.**

31. *A. cordifolius* (Linn.): stem often flexuous below, racemose-paniculate at the summit; leaves glabrous, or often hairy beneath and slightly scabrous above; the radical and lower cauline cordate, acuminate, sharply serrate, on slender naked or margined and ciliate petioles; the uppermost ovate or lanceolate, sessile or with short margined petioles, often entire; heads numerous or somewhat crowded in oblong spreading or divaricate thyrsoid racemes or panicles; scales of the closely imbricated involucre oblong-linear, obtuse or rather acute, appressed, with short green tips; achenia glabrous.—*Linn. spec.* 2. *p.* 875 (*& hort. Cliff.*); *Ait. Kew.* (*ed.* 1) 3. *p.* 207; *Michx.! fl.* 2. *p.* 114; *Pursh! fl.* 2. *p.* 552; *Nutt.! gen.* 2. *p.* 156; *Ell.! sk.* 2. *p.* 364; *Lindl.! bot. reg. t.* 1597; *Bigel.! fl. Bost. ed.* 2. *p.* 313; *Darlingt.! fl. Cest. p.* 463. A. paniculatus, *Ait. Kew. l. c.*; *Pursh, l. c.* A. heterophyllus, *Willd. enum.* 2. *p.* 882. A. cordifolius, heterophyllus, & paniculatus (chiefly), *Nees, Ast. p.* 52 *&* 55; *Lindl.! in herb. DC., herb. Hook., & herb. Torr.*; *DC.! prodr.* 5. *p.* 233. A. pubescens, *Hornem. hort. Hafn. suppl.* 1. *p.* 98, fide *Nees.* A. latifolius autumnalis, *Cornut. Canad. p.* 64, *t.* 65. (Varies, with the stem glabrous, or pubescent in lines above, or roughish-hairy; the leaves broadly or narrowly ovate, either glabrous throughout, somewhat scabrous above, or hairy beneath; the branches of the panicle loosely or densely flowered.)

Woodlands, Canada! Northern and Western States! to the mountains of Georgia. Sept.–Nov.—Stem 1–4 feet high. Leaves membranaceous, or rather firm when growing in open situations, loosely veined, coarsely and sharply serrate, the radical and lower ones on slender narrowly margined ciliate petioles, 2–4 inches long; those of the branches small and frequently entire, reduced on the ultimate branchlets or peduncles to subulate bracts. Heads small, usually crowded in thyrsoid racemes on the rather short spreading or divaricate branches; the distinct peduncles also spreading. Scales of the involucre whitish, with green rather obtuse tips, often purple at the apex, minutely ciliate. Rays about 12, pale violet (or nearly white in shade) turning deeper; the disk changing to reddish-purple. The very numerous heads are smaller than in any of the preceding; the appressed involucre as in A. Shortii (except that it is much smaller), and the pale scales are tipped with short green points. We meet, however, with occasional specimens from the Western States, which, in their rather looser involucral scales with somewhat longer and more acute green tips, make a near approach to A. sagittifolius β.; and we have observed the ordinary form of the species to assume a similar state, when cultivated for a few years in fertile soil and more open situations. Perhaps the A. paniculatus, *Ait.* was founded upon a plant of this kind. The A. cordifolius of the Northern and Middle States is a very uniform and well-marked species.

32. *A. sagittifolius* (Willd.): stem strict, glabrous, racemose-compound above; the branches ascending, rigid; leaves ovate-lanceolate, somewhat hirsute-pubescent or nearly glabrous, serrate, attenuate-acuminate; the radical and lower cauline elongated ovate-oblong, cordate at the base, on slender narrowly margined petioles; the others narrowed into a winged petiole; the uppermost lanceolate or nearly linear, acuminate at each end, sessile, often entire; heads numerous, in strict and dense compound racemes, on very short peduncles; scales of the cylindraceous involucre linear-subulate, appressed at the base, rather loose above; achenia glabrous.—*Willd. spec.* 3. *p.* 2035*? Nees, Ast. p.* 56*? (Lindl.! in herb. Hook.); Hook.! fl. Bor.-Am.* 2. *p.* 9*; DC. l. c.?* (not of *Ell.*) A. paniculatus, *Muhl.! herb.* (at least in part); *Ell. sk.* 2. *p.* 365*; Darlingt.! fl. Cest. p.* 464*;* not of *Nutt.*, nor of *Nees, &c.* A. urophyllus, *Lindl. in DC. l. c.?*

β. heads less crowded on the rigid branches; scales of the involucre lanceolate-subulate, or lanceolate with acute or acuminate tips; cauline leaves (varying from ovate to ovate-lanceolate) often nearly all cordate, thickish. (Varies, with the leaves, as well as the upper part of the stem, either almost glabrous, or scabrous-pubescent, or with the lower surface almost tomentose.)

Woodlands and low rich soil, Canada (Lake Huron, *Dr. Todd!* and Montreal, *Mr. Cleghorn! in herb. Hook.*) and on St. Peter's River, *Mr. Nicollet!* Western New York, *Dr. Sartwell!* and Pennsylvania! to Georgia! and Missouri! β. Western States, from Ohio! and Indiana! to Wisconsin! and St. Peter's River! Aug.–Oct.—Stem 2–4 feet high, branched above; the racemose (pubescent) flower-branches panicled, rather erect. Leaves slightly ciliate; the radical ones more or less cordate, or cordate-sagittate at the base (the sinus often closed), 2–5 inches long, and 1–2 broad, on petioles 2 to 6 inches in length; the upper cauline diminishing successively in size and width; those of the branches narrowly lanceolate and linear, reduced on the ultimate branchlets or peduncles to subulate bracts. Heads small (mostly larger than those of A. cordifolius), in crowded racemes, often almost sessile, or shorter than the bracteal leaves which subtend them. Scales of the involucre (as long as the disk) not very numerous, subulate from a rather broad pale appressed base to an acute point; the midrib and upper portion usually green. Rays about 12, narrow, purple or bluish, sometimes white; the disk yellow or turning purple.—This species is well characterised by both Elliott and Darlington, under the name of A. paniculatus. Possibly it is not the original A. sagittifolius; but, as it is certainly the plant of Hooker, and accords very well with Willdenow's description, and tolerably with that of Nees, it will perhaps be safe to retain the name, which is not inappropriate when applied to the radical leaves. It passes insensibly into our var. β.; which generally presents larger and more scattered heads, a somewhat turbinate involucre, with broader scales, which, however, always have slender pointed green tips; and the rays are sometimes bright blue: they are, as it were, intermediate between A. sagittifolius, A. cordifolius, and A. undulatus; but probably do not pass into the two latter.

33. *A. Drummondii* (Lindl.): stem and lower surface of the leaves canescent with a soft velvety pubescence; cauline leaves oblong-ovate, cordate, or crenate-serrate, tapering to an acute point, strigose or scabrous above, on margined petioles; the uppermost ovate-lanceolate and sessile; heads in strict and mostly dense thyrsoid racemes paniculate at the summit of the

stem; scales of the involucre subulate-linear; achenia minutely pubescent. —*Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 97, *& in DC. prodr.* 5. *p.* 234.

St. Louis, Missouri, and also Texas, *Drummond!* Western Louisiana, *Dr. Leavenworth! Dr. Hale!*—Plant intermediate in its characters between A. undulatus, cordifolius, and sagittifolius, resembling some states of the former in its pubescence, the second somewhat in its petioled and mostly cordate cauline leaves, and the latter in inflorescence; but apparently distinct from either. Stem strict and rather stout, apparently 1 to 3 feet high, when old less canescent and more scabrous. Leaves serrate with appressed teeth, appearing somewhat crenate, velvety beneath; the lower ones 2 to 4 inches long, on narrowly margined petioles 1–3 inches in length. Heads as large as in the preceding, often nearly sessile and glomerate or crowded on the branchlets. Involucre pubescent. Rays blue; the disk turning purple. —We here introduce the two following species (known to us only by the very brief characters given in De Candolle), on account of their apparently close resemblance to this and the preceding species.

34. *A. urophyllus* (Lindl.): stem racemose-panicled, the branches thyrsoid; leaves ovate-lanceolate, very much acuminate, sharply crenate-serrate, very scabrous above, the lower surface hairy; scales of the imbricated involucre subulate. *Lindl. in DC. prodr.* 5. *p.* 233.

Louisiana.—Species near A. hirtellus. Rays white, longer than the involucre; the disk purple. *Lindl.*—Is it not A. sagittifolius, without the radical leaves? No information is given respecting the source from which the specimens of this and the following were derived.

35. *A. hirtellus* (Lindl.): stem racemose-panicled, the racemose branches crowded and few-leaved; leaves cordate-ovate, crenate-serrate in the middle, very scabrous above, the lower surface hairy; involucre loosely imbricated. *Lindl. in DC. prodr.* 5. *p.* 233.

Louisiana.—Rays perhaps lilac-color; the disk purple. *Lindl.*—We have from Western Louisiana (collected by Dr. Leavenworth) very imperfect specimens, which may perhaps be referred to this species, if indeed they are not rather a more glabrous and attenuated state of A. Drummondii, with loose and virgate racemes: the tall and slender stem is nearly glabrous; the branches scabrous-pubescent; the cauline leaves ovate-lanceolate, serrate in the middle, more or less cordate, on distinct margined petioles, strigose-scabrous above, pubescent beneath.

36. *A. Lindleyanus:* stem stout, glabrous, or pubescent in lines, corymbose-paniculate above; leaves (thickish) mostly smooth and glabrous, ovate, sharply and unequally serrate; the radical and lowest cauline usually somewhat cordate, on broadly margined petioles; the uppermost oblong-lanceolate, narrowed at the base, sessile; heads loosely-paniculate or somewhat corymbose; scales of the involucre linear-lanceolate, acute, somewhat unequal, rather loosely imbricated; achenia at length almost glabrous.—A. paniculatus δ.? (& α. chiefly) *Hook.! fl. Bor.-Am.* 2. *p.* 8.

β. stem and lower surface of the leaves (especially the midrib and petiole) pubescent with loose somewhat deciduous hairs.

γ. more slender; leaves membranaceous; the radical and lower cauline narrowed into a winged (ciliate) petiole.—A. præcox, *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 9, not of *Willd.*

Saskatchawan, *Drummond!* and on the Red or Assiniboin River, *Douglas!* to Slave Lake, *Richardson!* β. Rocky Mountains (probably about lat. 52°), *Drummond!* γ. Fort Franklin on the Mackenzie River, *Richardson!*—Plant 2½ to 4 feet high, when growing in low fertile soils on the Assiniboin River, according to Douglas (in *herb. Hook.*); the Arctic specimens 12 to 18 inches high. Leaves thickish or somewhat fleshy, 1–3 inches long, mostly acute or acuminate, serrate with small and irregular sharp spreading teeth; the lowest only cordate (and mostly slightly so), or often truncate at the base, on rather long margined or winged partly sheathing petioles, which when young are usually ciliate with soft hairs, but afterwards naked: upper cauline leaves ovate-lanceolate or oblong, acute or acuminate at each end. Flower branches erect, often nearly simple, and corymbose at the summit, leafy only at the divisions. Heads larger than in A. cordifolius or sagittifolius: rays about 20, blue or violet; the disk changing to purple. Scales of the involucre rather few, with slender linear-lanceolate green tips.—To this apparently well-marked and exclusively northern species we also refer the specimens of Douglas which are cited under A. sagittifolius in Hooker's Flora; which, like others from Saskatchawan, are larger than the Arctic plant, and with more numerous and rather smaller heads, but there is no other difference. In the latter, even the radical leaves are but slightly cordate or truncate at the base, and some of them frequently taper into the petiole; so that we find no adequate distinction between them and the A. præcox, *Lindl. in Hook.*, which was collected in the same region.

37. *A. ciliolatus* (Lindl.): stem simple (6–8 inches high); leaves all ovate, sharply serrate in the middle, ciliate, abruptly narrowed into a [margined] petiole, scabrous along the margins; heads axillary, sessile or on short pedicels, somewhat solitary; scales of the involucre erect, with membranaceous tips. *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 9, *& in DC. prodr.* 5. *p.* 235.

Slave Lake, *Richardson!*—Dr. Lindley has remarked the close resemblance of this plant to his A. præcox (our A. Lindleyanus γ.), of which we greatly fear it is only a depauperate state. The heads are smaller, and in a specimen which bears 6 or 7 they are somewhat spicate or glomerate. Like the preceding, the margins of the young leaves and petioles are fringed with white hairs, which are usually deciduous when the leaves are fully developed; so that the name is not very appropriate.

* * * * * * * * *Heads* (*small and numerous*) *paniculate-racemose: scales of the campanulate or hemispherical involucre closely imbricated in several series, rigid, more or less unequal; the coriaceous whitish base appressed, with abrupt mostly squarrose or spreading herbaceous tips: achenia minutely pubescent: rays* (10–25) *white or pale purple: stems much branched or diffuse: cauline leaves rigid, sessile, linear, lanceolate, or subulate, entire; the radical and lowermost oblanceolate or spatulate, sometimes serrate.*—Ericoidei.

† **Leaves tapering to each end, or narrowed at the base: scales of the involucre broadest at the base, with subulate or acute green tips.**

38. *A. ericoides* (Linn.): glabrous or slightly hairy, racemose-compound; the simple branchlets or peduncles racemose and mostly unilateral on the virgate spreading branches; leaves rather rigid; the radical and lowest cauline oblanceolate or oblong-spatulate, tapering into a short margined petiole, often serrate; the others linear-lanceolate and linear-subulate, entire, acute at each end; scales of the hemispherical or often slightly turbinate involucre with acute or abruptly acuminate tips terminating the broader closely appressed lower portion; the outermost subulate from a very short base.—*Linn.! spec.* 2. *p.* 875 (excl. syn. *Dill.*); *Ait. Kew.* (*ed.* 1) 3. *p.* 202; *Willd. spec.* 3. *p.* 2027; *Pursh! fl.* 2. *p.* 546; *Ell.! sk.* 2. *p.* 348; not of *Lam. & Michx.!* A. ericoides & A. glabellus, *Nees. Ast. p.* 107; *Lindl.! in herb. Hook. & herb Torr.*; *DC.! prodr.* 5. *p.* 242. A. sparsiflorus, *Michx.! fl.* 2. *p.* 242; *Willd. enum.* 2. *p.* 880, in part (also including specimens of A. coridifolius & A. tenuifolius, fide *Nees*). A. tenuifolius,

Willd. spec. 3. *p.* 2026 (excl. syn.); *Nutt.! gen.* 2. *p.* 155; *Darlingt.! fl. Cest. p.* 467. A. tenuifolius, & *β.* ericoides, *Muhl.! cat. p.* 77. A. dumosus, "*Hoffm. phytogr. bl.* 1. *t. A, f.* 2"; *Willd. enum.* 2. *p.* 880, & *herb.*, fide *Nees;* not of *Linn.* A. ramosissimus, A. leptophyllus? & A. subulatus? *Hort. Par.* fide *DC.*

β. villosus: stem and branches, and usually the leaves, villous-hirsute.—A. villosus, *Michx.! fl.* 2. *p.* 113. A. pilosus, *Willd.! spec.* 3. *p.* 2025; *Nees. Ast. p.* 109. A. glabellus, *Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 97.

γ. platyphyllus: stem and mostly shorter branches densely villous; cauline leaves pubescent-hirsute, lanceolate; the lower ones oblong-spatulate; those of the branchlets only subulate-linear.

Barren soil, Canada and nearly throughout the United States! *β.* North Carolina! and Ohio! to Missouri! *γ.* N. Carolina, *Schweinitz! Mr. Curtis!* Indiana, *Dr. Clapp!* Aug.–Oct.—Stem 1–3 feet high, often branched from the base, bushy; the slender spreading branches, and the erect secund branchlets or peduncles, rigid. Leaves numerous, but not very crowded, rather rigid; the lower ones serrulate-ciliate, and often sparingly serrate, 2–4 inches long; the radical ones about the same length, oblanceolate; the primordial spatulate or obovate and much shorter; those of the upper part of the stem and branches varying from linear to subulate, an inch or less in length, acute, and pointed with a short bristle. Heads usually scattered along the branches, but sometimes rather crowded, 3–4 lines in diameter. Involucre rather shorter than the disk; two or three of the exterior scales similar to the subulate leaves of the branchlets, and like them cuspidate with a short bristle, either rather short and appressed, when the involucre appears slightly turbinate; or almost as long as the innermost, when it appears hemispherical; the inner scales glabrous or slightly ciliate, with rhomboid or triangular-lanceolate greenish tips, which are more or less spreading; the lower portion white, except the midrib, rigid and appressed, with membranaceous somewhat dilated margins. Rays 15–25, white or pale bluish-purple; the disk frequently turning reddish-purple. Achenia with a dense minute pubescence, turgid. Pappus of about 24 nearly equal serrulate-scabrous bristles, in a single series.—There is no difference between A. ericoides and A. glabellus, *Nees*, except a slight and variable degree of hairiness. Our var. *β.* is only a still more hairy state of the same species, with often wider leaves, which Nees (who examined an imperfect specimen in the herbarium of Willdenow), suspected to be the same as his A. glabellus. From this, we find a regular transition to our var. *γ.*, of which we have specimens with such broad cauline leaves (often half an inch wide by 2 to 3 inches in length), that no botanist would venture to unite them with A. ericoides without a very full suite of intermediate specimens. Perhaps the scales of the involucre are rather more equal; but we perceive no other difference.

† † Leaves crowded; the upper not narrowed, but usually dilated or partly clasping at the base: scales of the involucre spatulate, or narrowed below, mostly ciliate; the exterior with obtuse herbaceous tips.

39. *A. multiflorus* (Ait.): cinereous-pubescent or hairy; stem diffusely racemose-compound; the heads very numerous and crowded, somewhat unilateral; leaves linear, entire, closely sessile, not tapering at the base, with serrulate-scabrous or ciliate margins, spreading or at length recurved; scales of the campanulate involucre spatulate or linear-spatulate, with spreading or recurved tips; the exterior obtuse.—*Ait. Kew.* (*ed.* 1) 3. *p.* 203; *Willd. spec.* 3. *p.* 2027, & *enum.* 2. *p.* 880; *Pursh, fl.* 2. *p.* 546; *Ell.! sk.* 2. *p.* 349; *Nees. Ast. p.* 114; *Lindl.! in DC. prodr.* 5. *p* .243, & *in Hook.*

fl. Bor.-Am. 2. *p.* 13. A. ericoides dumosus, *Dill. Elth. t.* 36, *f.* 40. A. ericoides, *Lam. dict.* 1. *p.* 304 ; *Michx.! fl.* 2. *p.* 113. A. ericoides *var.* multiflorus, *Pers. syn.* 2. *p.* 443. A. ciliatus, *Muhl. in Willd. spec.* 3. *p.* 2027. A. dumosus, *DC.! prodr.* 5. *p.* 241 (as to spec. in herb., excl. char. & syn.); *Bigel. fl. Bost. ed.* 2. *p.* 311?· (Varies, in the pubescence of the stem, leaves, and involucre, from hirsute-canescent to almost glabrous; in the scales of the involucre from spatulate and obtuse to nearly linear and acute, with the margins either strongly or slightly ciliate; and in the racemes, which are either dense and elongated, or more compound and thyrsoid; or, in sterile soil with few and scattered heads, sometimes even solitary and terminating the branches.)

β. *stricticaulis:* stem strict, slender, narrowly racemose at the summit, or slightly compound; heads (small) somewhat scattered; scales of the involucre mostly acute, more squarrose.—A. ericoides var., *Lindl.! in herb. Hook.* A. ericoides, *Hook.! fl. Bor.-Am.* 2. *p.* 12 (chiefly), excl. syn.

γ. *commutatus:* heads larger, fewer, solitary on the branches, or racemose-spicate.—A. ramulosus, β. incano-pilosus, *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 13, *& in DC. l. c.* A. biennis, *Torr.! in ann. lyc. New York*, 2. *p.* 212 ; *Lindl.! in herb. Torr.*; not of *Nutt.*

Dry fields and sandy or gravelly soil, Canada, Massachusetts! and New York! to Georgia; and throughout the Western States from Michigan! to the Upper Missouri! β. Saskatchawan, and towards the Rocky Mountains, *Drummond!* γ. Upper Missouri, *Dr. James!* Rocky Mountains, *Drummond!* to Fort Franklin on the Mackenzie River, *Richardson!* Aug.–Nov.—Stem 1–2 feet high, much branched, very bushy; the branches mostly spreading, very leafy; the small heads usually crowded in dense racemes. Leaves 1-nerved, or somewhat 3-nerved by the confluence of the few veinlets, obtuse or scarcely acute, but usually tipped with a mucronate bristle; the cauline ones an inch to an inch and a half in length, 1–2 lines wide, often with tufts of smaller ones fascicled in their axils; those of the branchlets much smaller, crowded. Involucre 2 to 3 lines in diameter; the scales rather rigid, whitish and appressed, except the short spreading or recurved green tips, usually mucronulate like the leaves; the exterior shorter, more spatulate, and obtuse; the innermost linear, acute. Rays 10–15, broadly linear, white, or slightly tinged with purple; the disk-flowers about the same number, turning slightly purple. Achenia turgid, covered with a minute appressed pubescence.—The var. β. is a more attenuated plant, probably growing in shady places, with the leaves also more slender; certainly not a variety of A. ericoides. We have not seen the specimens from 'Red River, *Douglas*,' cited under that species in *Hook. fl. Bor.-Am.*, and know not whether they should be referred here.—The var. γ. does not differ from the ordinary A. multiflorus, except in the size and number of the heads, which are subject to considerable variation. It was a specimen of this plant (erroneously named A. biennis in *herb. Torr.*) that Dr. Lindley had in view, when he remarked the close affinity of his A. ramulosus β. with A. biennis *Nutt.* (A. canescens, *Pursh*). We have also a specimen of A. multiflorus α., with more scattered heads, collected in Michigan, which Dr. Lindley has labelled 'A. canescens, *Pursh*': hence, probably, by some misapprehension, De Candolle, on his authority, has given Massachusetts as a habitat of that species; which, however, is not found east of the Mississippi.

40. *A. falcatus* (Lindl.): somewhat cinereous-pubescent with appressed hairs; stem strict, slender, racemose or somewhat compound at the summit; the heads solitary or several on the erect contracted branches; leaves linear, entire, minutely appressed-pubescent; the cauline partly clasping by a broad or somewhat dilated base, often slightly falcate, the margins scabrous; scales of the hemispherical involucre linear, somewhat narrowed below, all nearly equal in length, with spreading tips, mucronate-acute.—*Lindl.! in*

Hook.! fl. Bor.-Am. 2. *p.* 12, *& in DC. prodr.* 5. *p.* 241. A. ramulosus *α., Lindl.! in Hook. l. c. p.* 13, *& in DC. l. c. p.* 243. A. bracteolatus, *Nutt. in trans. Amer. phil. soc. l. c.?*

Arctic America, from Fort Franklin on the Mackenzie River, to Cumberland House on the Saskatchawan, *Richardson!*—Stem 1–2 feet high. Leaves very numerous, 1½–2 inches long, 1-nerved or obscurely 3-nerved, usually broadest at the base, abruptly acute or obtuse, but tipped with a mucronate bristle. Heads in a simple or more or less compound narrow raceme, larger than the ordinary states of A. multiflorus; the scales of the nearly glabrous involucre more loose, equal, and acute.—The A. falcatus and the typical A. ramulosus of Lindley (from Fort Franklin and Cumberland House) appear to us entirely similar; and the affinity of the species is clearly with A. multiflorus.

41. *A. Nuttallii:* smooth and nearly glabrous; branches racemose, simple, rather naked, bearing solitary or few heads; leaves linear, rigid, entire, with scabrous margins; the upper sessile or somewhat clasping by a broad base; the radical and lowest cauline lanceolate, tapering into a petiole; scales of the involucre unequal, closely imbricated, linear-oblong, with short herbaceous tips; the exterior obtuse.—A. ramulosus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 293, not of *Lindl.*

Plains of Lewis River, near the Rocky Mountains (about lat. 42°), *Nuttall!*—Plant 6–12 inches high, nearly glabrous to the naked eye; the branches mostly bearing single subglobose heads, of about the same size of those of A. ramulosus. Leaves coriaceous, acute; those of the branches few and small. Involucre hemispherical-campanulate, at length widely hemispherical, nearly glabrous; the scales appressed, obtuse or abruptly acute; the exterior successively shorter.—Allied to the preceding, but apparently quite distinct.

42. *A. campestris* (Nutt.): viscid-puberulent; cauline leaves oblong-linear, entire, mostly obtuse, closely sessile, slightly clasping; the radical ones oblanceolate, serrulate towards the summit, tapering into a petiole; heads racemose or slightly panicled; scales of the involucre lanceolate, very acute, viscid, rather loosely imbricated in about 3 series, somewhat spreading.—*Nutt.! in trans. Amer. phil. soc. l. c.*

"Plains of Lewis River, in the Rocky Mountain region: with A. ramulosus [A. Nuttallii], which it closely resembles, but differs in being every where somewhat pubescent and viscid, with a strong scent, &c. Stem about a foot high." *Nuttall!*—Heads as large as in the preceding. Involucre rather shorter than the ferruginous pappus. Ovary pubescent.

43. *A. bracteolatus* (Nutt.): stem pulverulently pubescent; leaves linear or oblong-linear, acute, sessile, entire; heads racemose-paniculate, mostly solitary on the leafy branches; involucre smooth, spreading; the scales oblong, somewhat acute; the outermost similar to the branch leaves.—*Nutt. in trans. Amer. phil. soc. l. c.*

"With the preceding, to which it is nearly allied, but remarkable by the smooth leaf-like involucrum. The radical leaves are unknown. Stem and branches more leafy than in the two preceding; the leaves nearly all similar. Flowers lilac-purple, rather large. *Nuttall.*—This species is unknown to us: we introduce it here on account of the resemblance it is said to bear to the preceding.

* * * * * * * * * *Heads* (*middle-sized or small*) *mostly racemose: scales of the involucre imbricated and unequal in length, membranaceo-herbaceous, with short appressed or somewhat spreading* (*not squarrose*) *greenish tips: achenia minutely pubescent or nearly glabrous: rays* (12–30) *usually pale or white, often small: stems at*

length much branched, racemose or paniculate, rarely corymbose: leaves serrate or entire (the radical spatulate, obovate, or oblong); the cauline sessile, usually tapering at the base.—Dumosi.

† Heads small: rays often short.

44. *A. racemosus* (Ell.): scabrous-pubescent; stem racemosely much branched; the heads spicate-racemose and mostly crowded towards the summit of the long and slender erect branches; leaves rather rigid, linear, sessile, entire, mucronulate, with minutely serrulate-scabrous margins; those of the branches short and scattered, spreading, linear-subulate or lanceolate; scales of the glabrous involucre subulate-linear, very acute, imbricated in 4 or 5 series, somewhat spreading, the innermost fully as long as the disk; rays very short.—*Ell.! sk.* 2. *p.* 348.

Damp or dry soil, Paris Island, South Carolina, *Elliott!* Florida, *Dr. Leavenworth!* Sept.-Oct. (*Ell.*)—Stem 2–3 feet high, erect, producing very numerous (rather strict? and mostly simple) slender virgate branches, along the upper part of which the small heads (scarcely as large as in A. multiflorus) are disposed, on peduncles 1 to 3 lines long, or seldom longer; forming either crowded or often loose spicate racemes, 3–5 inches long; the lower heads shorter than the leaves which subtend them. Lower leaves apparently 2–3 inches long, and 2–3 lines wide; those of the branches 4–2 lines long, with somewhat hispidly scabrous margins (under a lens). Scales of the involucre rather rigid, nearly glabrous, numerous; the exterior shorter; the innermost somewhat membranaceous, in the young state manifestly longer than the disk, spreading above. Rays very small, linear, pale purple, scarcely exserted beyond the disk or the involucre. Achenia minutely pubescent.—A very distinct species, which we have only seen from the sources mentioned above.

45. *A. Baldwinii:* scabrous-pubescent throughout, stem paniculate-compound; the heads solitary or loosely racemose on the branchlets; leaves rigid, closely sessile, partly clasping, entire, very scabrous above, mucronulate; the cauline ones oblong-linear; those of the branches and branchlets short, erect, oblong-lanceolate or ovate-subulate, acuminate-mucronate; scales of the involucre linear, acute, minutely pubescent, rather loosely imbricated in 3 or 4 series.

α. leaves appressed and crowded on the branchlets; scales of the involucre narrowly linear, very acute.

β. leaves more scattered on the branchlets; scales of the involucre broader, acute.—A. coridifolius, *Hook.! compan. to bot. mag.* 1. *p.* 97 (partly), not of *Michx.*

Dry soil? *α.* Georgia, *Baldwin!* (v. sp. in *herb. Schweinitz*, now *herb. acad. Philad.*; the specimens mixed with A. coridifolius and A. ericoides.) *β.* Jacksonville, Louisiana, *Drummond!* New Orleans, *Dr. Ingalls!*—Plant more closely allied to A. dumosus *β.* coridifolius than to any other species, nearly similar in habit, the size and disposition of the heads, &c.; differing, however, in its rough or even minutely hispid pubescence, more acute and cuspidate branch-leaves, and especially in the (fewer) acute scales of the involucre. It may also be compared (especially var *α.*) with the species of our section Brachyphylli), which it resembles in the short and nearly uniform upper leaves, which are mostly broadest at the base and partly clasping, and in the short rough pubescence; but the involucre, achenia, &c. are abundantly different. The fully developed branches of A. azureus (without the lower leaves) somewhat resemble var *β.* of this species; but they may be distinguished by their larger heads, with the scales of the turbinate involucre much more numerous, broader, and appressed, &c. The radical and lowest cauline leaves are unknown to us: those of the stem are an inch to an inch and a half long; those of the branches gradually reduced to one or three lines. Scales of the involucre rather loose and spreading when old. Rays apparently blue or purple. Achenia slightly pubescent.

46. *A. dumosus* (Linn.): stem glabrous or slightly scabrous-pubescent, racemosely branched or decompound; the heads solitary at the extremity of the spreading branchlets, or rarely somewhat racemed; leaves linear, crowded, glabrous, with scabrous margins, sessile; the lower cauline ones linear-lanceolate, often remotely serrate with small and sharp appressed teeth; those of the branchlets small, mucronulate; scales of the involucre linear-spatulate, obtuse (or sometimes abruptly and slightly mucronulate), closely imbricated in 4–6 series, with short herbaceous tips.

α. verus: paniculate-racemose; the branchlets clothed with numerous linear-oblong and obtuse (obscurely mucronulate) small and spreading leaves; the upper cauline leaves frequently obtuse.—A. dumosus, *Linn.! hort. Cliff.*, *& spec.* 2. *p.* 873 (excl. syn. *Gronov.?*); *Ait. Kew.* (*ed.* 1) 3. *p.* 202; *Bigel. fl. Bost. ed.* 2. *p.* 311; *Boott! in herb. Hook.* A. Americanus multiflorus, &c., *Pluk. alm. t.* 78, *f.* 6. A. fragilis, *Lindl.! in herb. Hook. &c.* partly, (*& bot. reg. t.* 1537?) A. sparsiflorus, *Nutt.! gen.* 2. *p.* 155, not of *Michx.*

β. coridifolius: racemose-compound or decompound; the slender and elongated diffuse branches and branchlets clothed with crowded, depauperate and bract-like, spreading or reflexed, rather obtuse, linear leaves; the lower cauline leaves linear, elongated, mostly entire.—A. coridifolius, *Michx.! fl.* 2. *p.* 112; *Willd. spec.* 3. *p.* 2028; *Pursh, fl.* 2. *p.* 547; *Nees, Ast. p.* 105; *Lindl.! bot. reg. t.* 1487, *& in herb. Hook. &c.*; *DC.! prodr.* 5. *p.* 241. A. foliolosus, *Ell.! sk.* 2. *p.* 345, probably not of *Ait.* A. foliolosus β. coridifolius, *Nutt.! gen.* 2. *p.* 155. A. sparsiflorus, *Willd. enum.* partly, ex *Nees.*

γ. subulæfolius: diffusely compound; leaves of the branches and branchlets rather subulate-linear, erect or slightly spreading; otherwise as in β.

δ. gracilentus: stem slender, rather sparingly branched; leaves scattered on the branchlets, very small, acute or obtuse; all usually entire.

ε. strictior: stem sparingly paniculate or racemose-compound; leaves usually more or less acute; the lower ones often slightly serrate; those of the short branchlets rather numerous, scarcely spreading; otherwise nearly as in α.—A. fragilis, *Lindl.! in herb. Torr. &c.*, partly.

ζ. subracemosus: stem racemose-compound; the heads often somewhat racemed; leaves mostly acute, the cauline ones frequently remotely serrulate; those of the branches more scattered, slender, and proportional, acute; scales of the involucre rather narrower, often slightly acute.—A. dumosus, *Nees, Ast. p.* 105, ex descr. A. foliolosus, *Ait. Kew.* (*ed.* 1) 3. *p.* 202? excl. syn. *Dill.?*

Dry or moist shady soil throughout the United States: α. Massachusetts! to Alabama! β. Throughout the Southern States! (mostly in pine woods.) γ. Texas, *Drummond!* Western Louisiana, *Dr. Leavenworth!* δ. Alabama, *Dr. Gates!* also in Georgia and Florida! ε. Vermont! and Michigan! to New Jersey! &c., usually in moist soil. ζ. Northern and Middle States! Aug.–Oct.—Stems 1–3 feet high. Lower leaves 2–3 inches long, 2–5 lines wide; those of the branches and branchlets reduced frequently to 2–3 lines in length, slightly rigid, with minutely ciliolate-scabrous margins. Heads usually about 4 lines in diameter, scattered: scales of the regularly imbricated involucre obtuse; the inner ones often mucronulate, about the length of the disk, slightly ciliate; the exterior successively shorter. Rays rather short (20–30), pale purple, occasionally almost white. Achenia minutely and sparsely pubescent under a lens.—The plants which we have here brought together (excepting the last enumerated variety, if such it be, which makes an approach to the following species,) accord in their inflorescence, achenia, scales of the involucre, &c.; while the foliage, in the vast number of specimens before us, presents almost every imaginable gradation between the extreme forms. It is not unlikely that we have united two or more species; but, as we have sought in vain for any available distinctions, we are compelled to arrange the principal forms as varieties. The effects of cultivation, so far as our observation extends, appear to confirm the correctness of this view. Specimens of the form we have assumed as the type of the species have been compared with the Linnæan and Banksian herbaria by Dr. Boott, who considers them identical with the A. dumosus of Linnæus.

47. *A. Tradescanti* (Linn.): stem slender, often somewhat pubescent in lines, much branched; the (small) heads numerous, usually densely racemose on the erect-spreading or at length divergent virgate branches, often unilateral; leaves sessile, glabrous, with scabrous margins; the cauline ones lanceolate-linear, elongated, mucronate-acute or acuminate, remotely serrate in the middle with fine and sharp teeth; the upper and those of the branches successively shorter and usually entire, mucronulate; those of the branchlets oblong-linear, small; scales of the involucre narrowly linear, acute or acutish, imbricated in 3 or 4 series, appressed; the innermost rather shorter than the disk.—*Linn. hort. Cliff. p.* 408, *hort. Ups. p.* 262, *& spec.* 2. *p.* 876; *Michx.! fl.* 2. *p.* 115; *Pursh! fl.* 2. *p.* 556; *Ell. sk.* 2. *p.* 358; *Nees, Ast. p.* 103; *Lindl.! in herb. Torr.* (not in *herb. Hook.*); *DC. prodr.* 5. *p.* 241. A. Virginianus ramosissimus serotinus, parvis floribus albis, *Moris. hist.* 3. *p.* 121. A. vimineus, *Lam. dict.* 1. *p.* 306. A. recurvatus, *Pursh, fl.* 2. *p.* 556? *Nutt. gen.* 2. *p.* 158?

β. fragilis: cauline leaves, except the lowermost, minutely appressed-serrulate or entire, usually shorter; heads more scattered on the branchlets. —A. fragilis, *Willd. spec.* 3. *p.* 2051; *Nees. Ast. p.* 102; *Boott! mss. in herb. Hook.*; not of *Lindl.*, *DC. &c.* A. multiflorus, *Nutt.! gen.* 2. *p.* 155, (excl. syn.) fide *herb.* A. tenuifolius, *Ell.! sk.* 2. *p.* 347, not of *Linn.*

Fields and along rivulets, in dry or rather moist soil, Massachusetts! to Ohio! Kentucky! and Louisiana! not uncommon. Aug.–Oct.—Stem 2–4 feet high, bushy; the branches very numerous, slender, racemosely arranged along the stem, or rarely somewhat corymbose or paniculate, at first often erect, but at length divergent or even divaricate, bearing very numerous heads on short pedicels, forming slender strict racemes, which decrease gradually in size upwards; in var. *β.* the racemes often more irregular, looser, and more paniculate. Lower cauline leaves 3 to 4 or 5 inches long, 3–4 lines wide, acute at each end, more or less evidently serrate with 4–8 sharp scattered teeth on each margin, which when rather large are somewhat spreading, but when minute are closely appressed; those of the branches and branchlets successively reduced in size. Heads smaller than in A. dumosus, about as large as is ordinary in the following species. Scales of the involucre fewer and narrower than in the former. Rays small, pale purple or almost white; the disk often turning purplish. Achenia closely and minutely pubescent.—While this species somewhat approaches narrow-leaved forms of the following; some states of var. *β.* having fewer, and consequently larger and more scattered heads, considerably resemble forms of A. dumosus, particularly the doubtful *var.* subracemosus, which should perhaps be referred to the present species.—A very different plant, with much larger heads, is frequently cultivated in the European gardens under the name of A. Tradescanti.

48. *A. miser* (Linn.? Ait.): stem mostly pubescent or hairy (often in lines), racemosely branched or compound; the numerous heads racemose along the spreading or divaricate branches; leaves lanceolate or oblong-lanceolate, sessile, attenuate or acuminate at each end, sharply serrate in the middle; the radical ones spatulate-lanceolate or oval, tapering into a petiole; those of the branches and branchlets successively smaller, and often entire; scales of the involucre linear, imbricated in 3 or 4 series (the exterior much

shorter, the innermost about the length of the disk), acute or rather obtuse; rays short, and often inconspicuous.—*Linn. spec.* 2. *p.* 887? (excl. syn. *Dill. Elth. t.* 35, *f.* 39.)* A. miser, divergens, diffusus, & pendulus, *Ait. Kew.* (*ed.* 1) 3. *p.* 205, and of most, if not all, succeeding authors.

α. miserrimus: stem and elliptical-lanceolate or cuneiform-lanceolate leaves more or less scabrous or pubescent; the flowering branches short, seldom divergent; scales of the involucre narrowly linear or linear-lanceolate, acute. —A. miser (excl. γ.), *Nees! Ast. p.* 111. A. miser, var. *Nutt.! herb.* A. myrtifolius, *Willd. enum. suppl.* fide, *Nees.*—The following are the chief variations: 1. Stem somewhat simple, puberulent-scabrous, as well as the leaves; heads glomerate or somewhat spicate on short racemed branchlets, which are often shorter, or sometimes longer than the leaves; in the latter case usually leafy.—2. Scabrous-puberulent; the flowering branches usually longer than the upper cauline leaves, bearing few or solitary heads. (A. miser, *Nees! in herb. Hook.* ex dono *Lindl.*)—3. Leaves scabrous above, the lower surface and the stem or branches softly cinereous-pubescent; heads somewhat secund and spicate on the (abbreviated or sometimes elongated) ascending flowering branchlets. (A. miser, var. *Nees.! in herb. Arn. & Hook.* Jacksonville, Louisiana, *Drummond!*)

β. glomerellus: mostly cinereous-pubescent or scabrous; leaves oblong-lanceolate, elliptical-lanceolate, or cuneiform-oblong, scabrous above, mostly short; heads glomerate-spicate at the summit of the stem or on divergent branches; scales of the involucre linear, obtusish or abruptly acute.—Varies: 1. Stem low (6–18 inches high), rigid, simple or with ascending branches; heads glomerate in short spikes at the summit of the stem or branches, and in the axils of the upper leaves, or on short spreading flowering branchlets; scales of the involucre rather broadly or spatulate-linear; the innermost sometimes narrower and more acute. (A. miser, *Nutt.! gen.* 2. *p.* 158; *Darlingt.! fl. Cest. p.* 466.)—2. Plant taller, less pubescent; heads (rather smaller) more loosely spicate along the slender or virgate divaricate branches; or the lower flowering branches somewhat compound. (A. diffusus, *Muhl.! in herb. Ell.; Nees, Ast.* (partly,) *and in herb. Arn. & Hook.!* St. Louis, *Drummond!*)

γ. diffusus: stem pubescent, or glabrous below, much branched; leaves nearly glabrous (mostly slightly scabrous above, sometimes sparsely pubescent beneath), lanceolate, oblong-lanceolate, or the lowermost often oblong-oval; branches diffuse, mostly elongated, divergent, recurved-spreading or divaricate; heads loosely or densely racemose; scales of the involucre linear, acute or acutish.—A. diffusus (partly?), divergens, pendulus, & parviflorus, *Nees, Ast. l. c.; DC. l. c.* A. divergens, *Nutt.! l. c.* A. parviflorus, *Darlingt.! fl. Cest. p.* 466. A. secundiflorus, & A. horizontalis, *Desf. cat. hort. Par.*—Varies in the disposition and length of the branches, in the number (and slightly in the size) of the heads, the size and breadth of the leaves, &c.: but the different forms are so connected that they are not clearly distinguishable into definite subvarieties. The cauline leaves vary from elongated lanceolate (3–5 inches, or in some specimens from Kentucky and Wisconsin even 6 inches long,) or the lowermost even broadly oval, to cuneiform-lanceolate, oval-lanceolate (2–3 inches long); the more or less elongated primary branches are ascending or mostly divergent; the heads usually disposed along them on short pedicels, so as to form elongated leafy racemes, sometimes forming small glomerules, sometimes very numerous in spiciform divaricate racemes, or frequently more loose and somewhat paniculate, &c. Some of the narrow-leaved forms, with the midrib pubescent or hirsute beneath, pass into the following:

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* There are, if we mistake not, no specimens of A. miser in the Linnæan herbarium; and the description of Linnæus appears to have been drawn chiefly (but not entirely) from the 'Aster ericoides, Meliloti agrariæ umbone,' *Dill. Elth.* (A. foliolosus, *Ait.* q. v.) It is evident, however, from the phrase: "Radius albus, brevissimus et miser," that Linnæus had some other than the Dillenian plant in view, probably some form of the polymorphous species to which the name of A. miser has generally been applied by succeeding botanists; but this is by no means certain.

δ. *hirsuticaulis:* stem and midrib of the narrowly lanceolate elongated leaves more or less hirsute; heads racemose or spicate on short spreading or divergent branchlets; the uppermost in axillary glomerules much shorter than the leaves; scales of the involucre very narrowly linear, acute.—Varies: 1. Leaves nearly entire, but some of them remotely and very sharply serrate (4–5 inches long, attenuate-acuminate); the midrib very hirsute beneath; heads few, in racemes much shorter than the leaves. (A. hirsuticaulis, *Lindl.! in DC. prodr.* 5. *p.* 242, ex *herb. Torr.* Albany, New York, *Beck!*)—2. Stem sparingly hirsute-pubescent; the midrib of the (mostly entire) leaves glabrous or nearly so; heads few and glomerate on branchlets usually much shorter than the leaves; the uppermost in small sessile glomerules; otherwise as in no. 1. (Bellows Falls, Vermont, *Mr. Carey!*)—3. Leaves narrowly lanceolate, attenuate-acuminate (3–4 inches long), mostly serrate with sharp scattered teeth; the midrib beneath and stem hirsute; heads in short recurved-spreading somewhat leafy spikes; the upper in sessile glomerules. (Wayne County, New York, *Dr. Sartwell!*)

Old fields, borders of thickets &c., Canada! and throughout the United States! common. Aug.–Oct.—A polymorphous species, 10 inches to 3 feet high, erect or diffuse, often beginning to flower when nearly simple, but at length usually much branched, varying greatly according to soil, situation, and age. Heads small, often very numerous; the involucre nearly glabrous, the scales with short green tips. Rays white or tinged with purple, short, often inconspicuous: the corolla of the disk often turning purple; the limb deeply 5-parted. Achenia minutely pubescent.—This is the most polymorphous species of the genus. It would be easy to arrange its most remarkable forms as distinct species, but perfectly impossible to characterize them. Even our var. diffusus might thus be divided into a dozen species of equal consequence with those admitted by later authors. Its most striking states are, 1. a Western plant with lower leaves six inches long, and the heads also larger than usual: 2. a form which we have only received from N. Carolina, with nearly simple stems and inflorescence, and small broadly oval, or cuneiform-oblong leaves: the latter is sometimes called A. Cornuti.

49. *A. Lamarckianus* (Nees): stem pubescent in lines, racemose-decompound, coarctate; the branches paniculate-racemose; leaves lanceolate, acuminate, sessile, appressed-serrate, scabrous above; those of the branchlets lanceolate-acuminate, spreading; scales of the involucre linear, rather equal, loosely imbricated. *Nees, Ast. p.* 100; *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 11; *DC. prodr.* 5. *p.* 241. A. paniculatus, *Lam. dict.* 1. *p.* 306 (not of *Ait.*), fide *Nees.* A. Tradescanti, *Nees, synops. p.* 28. A. parviflorus, *Lindl. in Hook. fl. Bor.-Am. l. c.?*

Canada, according to Lamarck, *Nees.* Saskatchawan, *Richardson! Drummond!* (v. sp. in *herb. Hook.*)—According to Nees, this species is quite different from any with which he is acquainted, except his A. divergens. The plant from Saskatchawan appears nearly to agree with an immature specimen of the species cultivated in the Berlin botanic garden, under this name.

† † Heads middle-sized.

50. *A. simplex*' (Willd.): stem glabrous, racemose-decompound; the branches somewhat corymbose at the summit; the branchlets contracted, bearing few [middle-sized] heads; leaves lanceolate, acuminate, very smooth,

the margins scabrous; the lower serrate; scales of the involucre loosely imbricated, linear-subulate. *Nees.—Willd. enum.* 2. *p.* 887; *Nees, Ast. p.* 91; *DC. prodr.* 5. *p.* 239. A. lanceolatus, *Willd. spec.* 3. *p.* 2050? (a species of doubtful origin, perhaps not American), and of North American authors? A. salicifolius, *Darlingt.! fl. Cest. p.* 467; not of *Ait.?* A. æstivus, *Ait.? Willd.?*

β. stem diffusely branched; the branches pubescent in lines, often elongated and diverging; heads (variable but mostly rather large) racemose-scattered; scales of the involucre linear, acute, (rays blue or nearly white).—A. recurvatus, *Nees, Ast. p.* 93? A. Novi-Belgii *var.* minor, *Boott! in herb. Hook.* A. divergens (partly), *Lindl.! in herb. Hook.* A. obliquus (partly), *Lindl. in herb. Hook.*

γ. heads (middle-sized) in dense or contracted axillary racemes which are shorter than the cauline leaves; otherwise as in *β.*

δ. stem tall (4–6 feet high) erect; the branches hirsute or pubescent, often in lines; heads (pretty large) loosely racemose or somewhat paniculate towards the extremity of the branchlets; rays blue.

ε. stem 1–2 feet high, pubescent in lines above; heads numerous or crowded on the short branchlets, small; rays pale blue or bluish-white.

Wet banks of streams and margins of swamps, Canada! and nearly throughout the United States! *α. δ.* & *ε.* Common in the Northern and Middle States! *β.* Ohio! Kentucky! &c. common. *γ.* Ohio, *Mr. Lea!* Aug.–Oct.—A polymorphous and widely diffused species (not happily named A. simplex), much resembling the A. salignus of Europe, as Nees remarks, particularly the larger-flowered forms. Probably some species founded on plants long cultivated in European gardens have been derived from it; and perhaps A. obliquus, *Nees*, is among the number. Some states are, moreover, very near our A. tenuifolius *γ.* bellidiflorus; and our var. *ε.* closely approaches A. Tradescanti, but has larger heads, and broader as well as more deeply serrated lower leaves.—The leaves are 1 to 4 inches long, 3–10 lines wide, tapering to an acuminate point, glabrous and smooth on both sides, or the upper surface scabrous towards the margins, which are ciliolate-scabrous; the lower serrate in the middle with small and sharp or mucronate teeth, narrowed to the base, sessile or slightly clasping; the uppermost and those of the branches mostly entire. Scales of the obovoid involucre more or less unequal, loosely imbricated, narrow, acute; the tips often a little spreading. Disk flowers at length turning brownish or purplish. Achenia minutely pubescent.

51. *A. tenuifolius* (Linn.): nearly glabrous; stem paniculate-compound, or the branchlets and (rather small) heads often slightly racemose; leaves narrowly lanceolate or lanceolate-linear, mostly elongated, attenuate-acuminate, the margin scabrous; the lower ones usually sharply serrate in the middle; those of the branches and branchlets entire, attenuate, proportioned; scales of the hemispherical involucre numerous, linear or subulate-linear, acute, closely imbricated, or the points somewhat spreading, the innermost nearly as long as the disk; rays rather short.—*Linn. spec.* 2. *p.* 873 (at least as to syn. *Pluk.*); *Nees, Ast. p.* 119; *DC.! prodr.* 5. *p.* 245. A. Americanus Belvidere foliis, &c. *Pluk. alm. p.* 56, *t.* 78, *f.* 5. A. polyphyllus, *Willd. enum.* 2. *p.* 888, fide *Nees.* A. junceus, *Pursh, fl.* 2. *p.* 557; (*Ell. sk.* 2. *p.* 356?) *Nees, synops. p.* 26, fide *Nees.* A. Tradescanti (partly), *Lindl.! in herb. Hook.*

β. ramosissimus: paniculately much branched; the branches and branchlets rigid, somewhat erect, roughish-pubescent; leaves often scabrous; scales of the involucre more closely imbricated and numerous, linear-subulate.—A. tenuifolius, (*Linn. l. c.?*) *Lindl.! in herb. Hook.* A. tenuifolius *γ. Nees, Ast. p.* 120.

γ. bellidiflorus: paniculate-compound, rather strict; the branchlets and heads often somewhat racemose; leaves smooth, or frequently scabrous above; scales of the involucre narrowly linear, acute, loosely imbricated.—A. bellidiflorus, *Willd. enum.* 2. *p.* 886; *Nees, Ast. p.* 97; *DC. prodr.* 5. *p.* 240; *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 11. A. angustus & rigidulus, *Nees, synops. p.* 26, *& p.* 29.—Varies: 1. Leaves narrowly lanceolate or linear, elongated, nearly entire: 2. Leaves shorter and usually entire; heads smaller. (A. dracunculoides, *Willd. spec.* 3. *p.* 2050, *& enum. l. c.*, fide *Nees.* (v. sp. *hort. Berol.*) A. leucanthemos, "*Desf. cat. hort. Par. ed.* 3. *p.* 401"; *Nees, Ast. p.* 95; *DC. l. c.*; not of *Raf.* A. bellidiflorus, *Nees, synops. p.* 21. A. artemisiæflorus, *Poir. suppl.* 1. *p.* 500.): 3. Lower leaves rather broadly lanceolate, sharply and often coarsely serrate, or sometimes nearly entire.

Low or moist soil, Canada (γ. from the Saskatchawan!) and Northern States! to the upper districts of N. Carolina. Aug.-Oct.—Stem 2-4 feet high, usually rather stout and rigid; the branches often pubescent, especially in lines. Cauline leaves varying from 2½ to 5 or even 6 inches in length (those of the branches very gradually reduced in size), narrowed at the base, tapering above to a long attenuate very sharp point, scabrous-ciliolate under a lens, of a rather firm texture, with a strong midrib, the veinlets copiously and conspicuously reticulated beneath. Heads about middle-sized (larger than in A. miser); the scales of the involucre acute or acuminate, somewhat ciliate; the exterior often greenish throughout, the others with short green tips. Rays numerous, considerably longer than the disk (which sometimes turns purplish), pale purple or nearly white, usually assuming a deeper tint before fading.

52. *A. carneus* (Nees): glabrous, or the strict racemose branches somewhat pubescent in lines; leaves uniform, entire or nearly so, narrowly lanceolate, mucronate-acuminate, slightly scabrous above, with serrulate-scabrous margins; the lower more or less attenuate towards the base; the upper shorter and partly clasping; heads (middle-sized) racemose towards the summit of the leafy branches; involucre obovate, manifestly shorter than the disk; the scales unequal, lanceolate, abruptly acute, closely imbricated; rays rather large.—*Nees, synops. p.* 26, *& Ast. p.* 96; *Lindl.! in herb. Hook.* A. laxifolius γ. carneus, *Lindl. in DC. prodr.* 5. *p.* 236. A. obliquus, *DC.! prodr.* 5. *p.* 237, partly.—Varies, with the heads few and nearly sessile, on short leafy branches, which are aggregated in a compact raceme. (A. salicifolius, *Muhl.! in herb. Ell.*, partly.)

β. *subasper:* racemosely much branched; the branches usually very numerous, rather strict and rigid, puberulent, bearing numerous densely racemose heads; leaves minutely scabrous above; those of the branches shorter, oblong-linear or lanceolate.—A. subasper, *Lindl.! in Hook. compan. to bot. mag.* 1. *p.* 97, *& in DC. prodr.* 5. *p.* 237.—Varies: 1. Exterior scales of the involucre somewhat spatulate-linear, obtuse or abruptly and very slightly acute: 2. Stem densely racemose-compound at the summit; leaves of the branches and branchlets very short. (Louisiana, *Dr. Leavenworth!*) A state of the plant with short leaves and smaller heads scattered along the slender branches connects it with our var. γ.

γ. *ambiguus:* heads racemose along the branches, somewhat scattered, on short peduncles; involucre conspicuously shorter than the disk; cauline leaves elongated, rather broadly lanceolate, much attenuate at each end, sometimes sharply serrate in the middle; those of the branches nearly as in var. α.

Moist soil, Massachusetts, (near Boston, *Dr. Boott!*) to Pennsylvania, *Muhlenberg! Schweinitz!* and Ohio, *Dr. Riddell! Mr. Sullivant!* β. St. Louis, Missouri, *Drummond!* Indiana, *Dr. Clapp!* Louisiana, *Dr. Leavenworth!* γ. Ohio, *Dr. Paddock!* Sept.-Oct.—Cauline leaves (numerous) usually 2 to 3 or 4 inches long, of the same firm texture as in the preceding, and with the veinlets similarly reticulated; the apex more abruptly narrowed to a mucronate-acuminate point; those of the branches 1–2 inches long, usually broader in proportion to their length, those of the branchlets often very short. Heads usually larger than in A. tenuifolius, but somewhat variable in this respect; the scales of the involucre broader and shorter, appressed (or the outermost loose), more unequal, and regularly imbricated, pale, with short usually rhombic-ovoid green tips, which are very slightly spreading. Rays longer, broader, and more showy than in A. tenuifolius, 'flesh-colored' (*Nees*), nearly white, or sometimes light violet-purple in the wild plant; the disk often turning purplish. Alveoli of the receptacle somewhat lacerate or laciniate.—This species was described by Nees, from specimens of uncertain derivation, cultivated in the garden of Count Schœnborn. Dr. Lindley identified a plant collected near Boston by Dr. Boott, with an authentic specimen, from Nees. We have the same plant from Ohio, and other specimens, which clearly show that A. subasper of Lindley is only a form of this species. Although apparently distinct from both, it closely approaches A. laxifolius on the one hand, and A. tenuifolius (with which Nees compares it) on the other. Some states of it have not unfrequently been labelled A. Tradescanti; a name often applied to what we consider a form of A. tenuifolius.

53. *A. Greenei:* stem smooth and glabrous, racemosely branched or compound; leaves nearly all remotely appressed-serrulate, glabrous, acute or acuminate, scabrous above; the cauline ones narrowly lanceolate, elongated, slightly clasping (not dilated) at the base; those of the branches short, numerous, ovate-lanceolate or oblong, somewhat clasping at the base, spreading; heads (hardly middle-sized) simply racemose on the leafy branches, on very short bracteate peduncles; involucre campanulate, somewhat shorter than the disk; the scales linear-lanceolate, acute, rather closely imbricated in nearly 3 series, the exterior somewhat shorter.

Near Boston, *Dr. B. D. Greene! Dr. Pickering!* (in *herb. acad. Philad.*) —The specimens we have seen want the lower cauline leaves, and do not afford sufficient information as to the size of the plant. The cauline leaves in the specimens are 3–5 inches long, about half an inch broad, remotely serrate with minute teeth, of a rather firm texture; the veinlets of the lower surface finely reticulated, but less conspicuously than in A. carneus; the upper surface very scabrous in one specimen, but slightly so in the other: the leaves of the branches are pretty uniform throughout in size and shape, 6–12 lines long, lanceolate-ovate or elliptical, nearly all serrate like those of the stem. Heads nearly the size of those of A. carneus β. subasper, racemose or sometimes crowded along the slender ascending branches in a similar manner; the lower often shorter than the leaves from the axils of which they rise. Scales of the involucre rather appressed, pale below, with a greenish mid-nerve, more lax than in A. carneus, and with narrower and sharper herbaceous tips. Rays rather short, broadly linear, apparently purplish; the disk turning to reddish-purple. Achenia minutely puberulent.

* * * * * * * * * * *Heads (middle-sized or large, showy) mostly corymbose or paniculate: scales of the involucre equal or somewhat unequal, more or less imbricated, with lax or spreading herbaceous or foliaceous tips; the exterior frequently entirely herbaceous: achenia pubescent or glabrous: rays usually large and numerous, blue or purple: cauline leaves sessile, the upper more or less clasping.*—Salicifolii.

† Scales of the involucre erect or appressed, with mostly short (seldom squarrose) herbaceous tips; the exterior often entirely herbaceous.

54. *A. laxus* (Willd.): stem glabrous, racemose-compound or decompound; the branches loose and corymbose at the summit; the branchlets

elongated; leaves narrowly lanceolate, acuminate, the margin (and often the upper surface) scabrous; the lower ones somewhat serrate; those of the branchlets linear, obliquely spreading; scales of the involucre in the terminal heads loose, and nearly equal, linear; of the others imbricated, reflexed at the summit. *Nees.*—*Willd. enum.* 2. *p.* 886; (*Pursh, fl.* 2. *p.* 557?) *Nees, Ast. p.* 95; *DC. prodr.* 5. *p.* 240.

North America, *Willdenow.* (Low sandy fields, New Jersey to Virginia, *Pursh;* who, however, probably had a different species in view.) Near Boston, *Dr. Boott! Dr. Greene!* in *herb. Hook.*) New York, *Mr. Brownne!* Sept.–Oct.—The few specimens we have seen agree very well with the character of Willdenow, and that of Nees, which we have copied. They belong to a good-sized plant, with very numerous and rigid ascending (racemose) branches, which terminate in loose corymbs. The cauline leaves (3–5 inches long and 4–5 lines broad) are rather rigid, serrulate with scattered appressed teeth, the upper surface more or less scabrous; the uppermost and those of the branches short, partly clasping and sometimes slightly dilated at the base. The heads are rather smaller than in A. præaltus, but very similar, except that those which terminate the leafy branchlets present a much more foliaceous involucre; the numerous exterior scales being entirely herbaceous, thickish, broadly linear, obtuse or mucronate-acute, often as long as the disk, loose, at length squarrose-spreading; the outermost similar to the leaves of the branchlets: in the lateral heads, when these are produced, the scales are regularly imbricated, as in A. præaltus. The rays appear to be purplish-blue. Although he has placed the two species at some distance from each other, Nees appears to suspect that his A. laxus may pass into A. præaltus; which is most probably the case. Indeed these two species, as well as A. elodes and A. Novi-Belgii, seem to be connected by a series of intermediate forms.

55. *A. præaltus* (Poir.): stem or branches mostly hairy in lines, racemose-paniculate or corymbose at the summit; leaves lanceolate, partly clasping, acute, entire, or obscurely appressed-serrate, glabrous, with scabrous margins, the upper surface somewhat shining, smooth, or slightly scabrous towards the apex and margins; the lower narrowed towards the base; scales of the involucre unequal, loosely imbricated in 3 or 4 series, linear-lanceolate, acute, often with the tips spreading; rays rather large.—*Poir. suppl.* 1. *p.* 493; *Nees, Ast. p.* 71; *DC. prodr.* 5. *p.* 236. A. salicifolius, *Ait. Kew.* (*ed.* 1) 3. *p.* 203? (*Pursh, fl.* 2. *p.* 549?); *Bigel. fl. Bost. ed.* 2. *p.* 309. A. virgatus, *Nees, synops. p.* 27.

Moist woods and rocky banks of streams, New Hampshire! Massachusetts! and perhaps throughout the Northern States. Aug.–Oct.—Stem 1 to 5 or 6 feet high, often rather slender and flexuous, frequently hairy or pubescent throughout when young, at length smooth and glabrous except in lines, often purple, branched near the summit; the branches somewhat racemose or racemose-compound, rather rigid; the branchlets short, and usually forming a more or less fastigiate or thyrsoid-corymbose inflorescence. Radical or primordial leaves spatulate-oblong, 1–2 inches long, obtuse, nearly entire, tapering into a somewhat ciliate margined short petiole, sheathing at the base; all the lower ones often hairy on the midrib when young. Cauline leaves about 4 inches long, 5–8 lines wide, tapering gradually to an acute point, of a firm texture, pale and very smooth beneath, with a narrow prominent midrib, bright green above, usually a little scabrous only towards the summit; the veins forming loose open reticulations, which are rather conspicuous in the older leaves; the upper usually with a more or less dilated or auriculate insertion. Heads rather large and showy. Involucre as long as the disk; the scales numerous, pale and often somewhat narrowed towards the base, slightly ciliate, herbaceous above, mostly with slight membranaceous margins. Rays violet or pale blue, pretty large in the wild plant (the ligule as long as the involucre); the disk-flowers often changing to purple. Achenia minutely pubescent, or glabrous when old.—We should have restored the older name of A. salicifolius, were we at all confident that it belongs to this species: as this is doubtful, we have followed Nees and De Candolle. Pursh's plant is said to grow from New York to Virginia.

56. *A. elodes:* very smooth and glabrous; stem mostly simple, corymbose or rarely somewhat racemose-paniculate at the summit; leaves linear-lanceolate, fleshy, acute or acuminate at each end, entire or sparingly appressed-serrulate, shining, reticulate-veined, the upper surface often minutely scabrous towards the apex and margins; the uppermost partly clasping by a more or less narrowed base; scales of the obovoid involucre rather closely imbricated in 3 or 4 unequal series, linear or spatulate-linear, mucronulate-acute; the exterior often with recurved-spreading herbaceous tips; the innermost erect, as long as the disk; rays large; achenia glabrous.—A. paludosus, *Nutt. gen.* 2. *p.* 155*?*

β. leaves varying from narrowly lanceolate to broadly oval-lanceolate, or the lowermost lanceolate-spatulate.

Wet swamps, mostly in pine barrens, Massachusetts! Long Island! New Jersey! and Pennsylvania! to Virginia! and North Carolina! Aug.–Sept. —Stem usually simple, and 1 to 2 feet high, very smooth, mostly purple; the branches sometimes slightly pubescent. Leaves sparse, 3–5 inches long, usually from 2–4 lines wide, but varying from half to three-fourths of an inch wide (when they are commonly shorter in proportion and more or less acuminate at each end), mostly deep green and shining above, and conspicuously reticulated with impressed veins, the margins often slightly and sharply serrate; those of the branches small, spreading. Heads large and showy, few or rather numerous, in simple or somewhat compound corymbs, or sometimes paniculate racemes, solitary on the short and rather rigid, sparse and diverging branchlets. Involucre glabrous or slightly pubescent; the scales of a rather firm texture; the exterior herbaceous, except the pale broad margins near the base; the others with oblong-lanceolate herbaceous tips, which are sometimes erect, but usually more or less spreading or squarrose; the innermost more membranaceous, often with purple tips. Rays large, numerous, deep blue or violet; the disk flowers sometimes turning purplish. Achenia minutely and slightly pubescent when very young, smooth and glabrous when mature.—This is a common species in the swamps of the pine barrens of New Jersey, and is found in similar situations as far north as Massachusetts, and as far south at least as North Carolina. It varies much in the form of the leaves, which are frequently as narrow as in A. paludosus, but sometimes as wide as in A. Novi-Belgii. It begins to flower when only 8 or 12 inches high, and perhaps seldom attains more than two feet in height; while the heads are proportionally large and showy. We are not sure that it has been described by any author, either in Europe or this country; but it has probably been confounded with A. præaltus or A. Novi-Belgii, to both of which its different forms so closely approach as to render the diagnosis difficult. It can hardly be the A. brumalis of Nees (which is described from spontaneous German specimens, supposed to be of American origin), and is by no means a late-flowering species.

57. *A. Novi-Belgii* (Linn.): smooth and glabrous throughout (or the branches slightly pubescent in lines), often somewhat glaucous; stem stout; the branches strict, racemose or somewhat corymbose; leaves rigid or slightly coriaceous, pale and very smooth, or slightly scabrous towards the margins of the upper surface, lanceolate or oblong-lanceolate, somewhat serrate, tapering to each end, acute; the lower partly clasping by the narrowed base; the uppermost and those of the branches short, clasping by a broader base, often entire; involucre (hemispherical) about the length of the disk; the scales

lanceolate, somewhat unequal, rather closely imbricated in about 3 series, with broadish acute herbaceous tips; rays numerous, mostly large.—*Linn.! hort. Cliff. p.* 108, *& spec.* 2. *p.* 877; *Ait. Kew.* (*ed.* 1) 3. *p.* 206; *Pursh, fl.* 2. *p.* 554; *Nees! Ast. p.* 79; *DC.! prodr.* 5. *p.* 238, (excl. syn. A. floribundus, *Nutt.*) A. Novi-Belgii latifolius, &c. *Herm. Lugd. p.* 66, *t.* 69. A. serotinus, *Willd. spec.* 3. *p.* 2049 (partly), fide *Nees.* A. lævigatus, *Pursh, fl.* 2. *p.* 553?—The following varieties are enumerated by Nees, all described from garden specimens: Var. α. *ampliflorus;* the original species, as characterized above, (branches simply racemose, the large heads somewhat corymbose; ray ample, &c.) Var. β. *squarrosus:* leaves lanceolate, rather more elongated; branches simply racemose, with the heads somewhat corymbose; ray broad and dense; scales of the involucre somewhat equal, the exterior squarrose-spreading, often foliaceous and elongated. (A. junceus, recurvatus, and adulterinus, of some gardens). Var. γ. *serus:* stem taller; ray dense, flesh-colored, whitish towards the disk. Var. δ. *minor:* leaves lanceolate, attenuate; the branches crowded, dichotomous-corymbose, many-flowered; ray shorter and not so dense; scales of the involucre loosely imbricated, unequal; flowers smaller; stem lower. (A. floribundus, *Willd. spec.* 3. *p.* 2048, *& enum.* 2. *p.* 885, *&c.*)—The indigenous plant varies: 1. Heads (ample) solitary or nearly so on short axillary branchlets, often much shorter than the leaves.—2. Heads (rather large) in clusters or short crowded racemes at the summit of axillary branches, which are either shorter or longer than the cauline leaves, racemose along the stem or aggregated and somewhat corymbose at the summit.—3. Heads (smaller), racemose or racemose-paniculate towards the summit of numerous slender branches, which are racemose along the stem, the upper fastigiate; scales of the involucre narrower; ray shorter.

Borders of swamps and moist ground, from near the sources of the Mississippi (Banks of Spirit Lake, *Mr. Nicollet!*) to S. Carolina, *Elliott!* (A. lævis? *Herb. Ell.!*) and Georgia, *Miss Clay!* apparently not very common. Sept.–Oct.—Stem usually stout, 1–4 feet high. Leaves thickish; the lower ones often 5–6 inches long, and about an inch wide, often tapering from above the middle to the base, with a pretty strong midrib, the margins scabrous; the primary veins few; the reticulation of the veinlets rather obscure. Heads, when not very numerous, frequently an inch in diameter; including the rather linear and pretty large pale blue rays, but sometimes reduced to half that size. Exterior scales of the involucre occasionally herbaceous throughout; the others pale at the base; the short herbaceous tips also with slight pale or scarious margins. Disk often turning purplish. Achenia slightly pubescent.—Our plant, which wholly accords with the description of A. Novi-Belgii, α. *Nees,* is doubtless the same with the original Linnæan species, and with that figured by Hermann. Although extensively diffused, it appears to be uncommon in this country. It has been cultivated in Europe for more than a century and a half; and from it several nominal species have probably been derived.—The "specimen of an Aster from Dr. Scouler, gathered on the Columbia, which Prof. Lindley inclines to refer to A. asper," (*Hook. fl. Bor.-Am.* 2. *p.* 10, under A. luxurians,) is either a variety of A. Novi-Belgii, or belongs to a new species, of which there are not sufficient materials for description.

58. *A. amplus* (Lindl.): stem simple, stout; the racemose branches somewhat corymbose, nearly naked, hairy above, bearing 1–3 large heads; leaves glabrous, with scabrous margins, slightly serrate or nearly entire; the radical ones oval-lanceolate, tapering into a long narrowly-winged petiole, the lower cauline spatulate-lanceolate, acute, partly clasping; the upper narrowly oblong-lanceolate, often auriculate-clasping; scales of the involucre lanceolate, loose, equal, herbaceous; rays large.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 10, *& in DC. prodr.* 5. *p.* 236.

Rocky Mountains (lat. 54°–56° ?), *Drummond!*—A plant with large heads, mostly solitary on the erect and simple often leafless branches; and ample scattered leaves; the radical ones, including the elongated petioles, sometimes nearly a foot in length. Achenia slightly pubescent. Dr. Lindley compares it with A. brumalis.

59. *A. Douglasii* (Lindl.): stem glabrous, racemose-compound; the (few-leaved) branches loosely paniculate-corymbose, bearing few (rather large) heads; leaves linear-lanceolate, acute, mostly somewhat narrowed at the base, glabrous, nearly all serrate; scales of the hemispherical involucre broadly linear (or the exterior spatulate-linear), acute, loosely imbricated somewhat in 3 series, rather unequal, with spreading herbaceous summits; rays rather large.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 11, *& in DC. prodr.* 5. *p.* 239; *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 293.

Oregon, in low soils; common along the large rivers near the coast, *Douglas! Dr. Scouler! Nuttall!* Aug.–Sept.—Varies; with shorter branches and more numerous smaller heads; and with more slender and naked branches, bearing fewer and larger heads (*Lindl.*); and specimens collected by Mr. Nuttall have shorter and broader leaves, with rather strongly ciliolate-scabrous margins. Dr. Lindley considers it allied to A. eminens, which it resembles in foliage; and Mr. Nuttall compares it with A. Novi-Belgii, which it nearly approaches in the involucre and flowers.—The pappus turns brownish.

60. *A. laxifolius* (Nees): stem scabrous, racemose-compound, narrow; the branches racemose at the summit or slightly compound; leaves narrowly lanceolate (or lanceolate-linear), mucronately serrulate, attenuate to each end, clasping, flaccid, scabrous above; scales of the involucre linear, squarrose; those of the terminal heads nearly equal. *Nees, Ast. p.* 69. A. longifolius, *Nees, synops. p.* 26, and of the Leyden Garden; not of *Lam.*

β.? borealis: stem strict, smooth and glabrous, or pubescent towards the summit; leaves narrowly linear-lanceolate, elongated, with very scabrous sparingly serrulate or often entire margins; the upper surface slightly scabrous; heads solitary or few and mostly somewhat corymbose on the strict (often very short) branches; involucre about the length of the disk; the scales in 2–3 series, somewhat equal, lax, the summits more or less spreading or squarrose when old.—A. laxifolius (*α.* & *β.*), *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 10, *& in DC. prodr.* 5. *p.* 236, (excl. *γ.* carneus.) A. salicifolius, *Richards.! appx. Frankl. journ. ed.* 1. *p.* 748, not of *Ait.?*—Varies; with the leaves serrulate and entire; the stem with single or few heads, corymbose or racemose-compound; the pappus turns brownish. *Lindl. in DC.*—Varies also (if we mistake not,) with the upper leaves rather shorter; the heads somewhat crowded on the branches; the scales of the involucre (except in the primary heads) more unequal and appressed; verging towards A. carneus. (A. strictus *β.* angustifolius, *Lindl.! in Hook. l. c.* Saskatchawan, *Drummond!* not Arctic America.) A state with rigid leaves, the upper ones longer than the simply racemose heads, is A. æstivus, *Lindl.! in herb. Torr.*

γ.? lætiflorus: stem slender, mostly scabrous, racemosely branched; the long and almost filiform branches spreading; leaves linear or narrowly lanceolate-linear, elongated, acute, rather rigid, scabrous above; the margins remotely serrulate or often entire, very scabrous; heads loosely racemose or somewhat paniculate at the extremity of the branches, on slender peduncles or nearly naked branchlets; scales of the involucre unequal, with somewhat spreading tips.

North America (cultivated in the Leyden Garden), *Nees.* *β.* Canada (*Mrs. Percival!*), Lake Huron (*Dr. Pitcher!*), and Saskatchawan! to Arctic America! and west to the Rocky Mountains! and the interior of Oregon!

γ. Milwaukie, Wisconsin, *Dr. Lapham!* Columbus, Ohio, *Mr. Sullivant!* Sept.–Oct.—We refer the A. salicifolius of Richardson to A. laxifolius, on the authority of Dr. Lindley, who is probably acquainted with the plant of Nees, whose specific phrase we have copied. But we must remark, that our specimens do not well accord with the description of that species, which is said to differ from A. vimineus, *Nees*, "by its minutely and remotely serrulate leaves, 5–7 inches long and 4–5 lines broad; by its narrower (flesh-colored) rays about half the size; and its earlier florescence"; and the stem is said to be "hinc inde setulis inspersus." A specimen from Philadelphia, mentioned by Hooker, accords with the character in the latter respect; but we are confident this is a fragment of A. puniceus γ. vimineus. Our var. β.? (which abounds in, and is nearly confined to the northern regions, and may therefore bear the name of A. borealis if it should prove to be distinct,) is a slender plant, from 1 to 3 feet high; the long and narrow leaves of nearly the same breadth throughout, and except the lowermost, not at all attenuate towards the base, but with a broad partly clasping insertion. The heads are nearly as large as in A. puniceus; the rays numerous and long (the ligule fully the length of the involucre), apparently violet-blue; the achenia in some specimens rather densely, in others sparingly appressed-pubescent.—The var. γ., which is probably not specifically distinct from the preceding, is a very graceful plant, apparently of considerable size, with long and slender lax branches, and the heads loosely disposed at their extremities. The cauline leaves are 4 or 5 inches long, and about 4 lines wide; those of the branches perhaps broadest at the partly clasping base. Heads fully as large as in the preceding form; the scales of the involucre narrowly linear, in about 3 unequal series, loose, but not inclined to become squarrose. Rays numerous, long, showy, apparently pale violet or purple; the disk turning purplish. Achenia minutely puberulent.—The A. thyrsiflorus of the European gardens may have been derived from this species.

† † Scales of the involucre loose, narrow, acute, often recurved or spreading.

61. *A. longifolius* (Lam.): glabrous; stem smooth or sometimes scabrous below, paniculately branched; the (middle-sized) heads loosely corymbose-paniculate; leaves narrowly lanceolate or linear-lanceolate, elongated, somewhat clasping, attenuate-acuminate, the lower mostly serrate in the middle with scattered and spreading sharp teeth, smooth beneath; the upper surface broadly scabrous towards the margins; scales of the broadly turbinate involucre narrowly linear, acute, nearly equal, with the summits spreading or often recurved; rays numerous.—*Lam. dict.* 1. *p.* 306, fide *DC.! prodr.* 5. *p.* 239. A. eminens, *Willd. enum.* 2. *p.* 886; *Nees, Ast. p.* 87. A. junceus, *Ait. Kew.* (*ed.* 1) 3. *p.* 204, fide *Nees, DC. &c.* A. lævigatus, *Pursh, fl.* 2. *p.* 553? (ex *Nees. & DC.*)

β. stem stout, scabrous below (roughened with minute sharp points); leaves mostly entire; the lower elongated-lanceolate; those of the branches oblong-lanceolate, short; scales of the involucre more or less unequal, with shorter and less spreading summits.

'Swampy places from New York to Carolina,' *Nees, DC.* (derived partly from the habitats cited by Pursh under A. junceus, lævigatus, &c.) Southern States, *Le Conte!* β. In the Southern States? *Le Conte!* Sept.–Oct.—We have never met with the native plant, except in the herbarium of Major Le Conte, whose specimens very well agree with cultivated forms. The latter are subject to considerable variation, and six varieties are characterized by Nees and De Candolle. To one of these, (A. eminens ε. lævigatus, *Nees, l. c.*, or A. longifolius ε. lævigatus, *DC. l. c.*) Nees adduces the synonym, A. mutabilis, *Ait.* and A. lævigatus, *Pursh:* this is said to be a tall plant (5–6 feet high); with the oblong-lanceolate leaves smooth, the margins only scabrous, rigid, bright green and lucid: perhaps our var. β. does not materially differ from it. Another, the A. longifolius η. albiflorus, *DC.* (A. eminens η. *Nees, l. c.* A. virgineus, *Nees, synops.*), has white rays, rarely verging to reddish-violet, and more scabrous as well as broader leaves: from this the A. eminens var. virgineus, *Lindl. bot. reg. t.* 1656, is said to differ in the coarsely serrate upper leaves, and the erect scales of the involucre.—The plant varies from 2 to 5 feet high: the leaves, of a rather firm texture, are pale and very smooth below, usually shining above and reticulated; the lower often 5 or 6 inches long, 3–7 lines wide, tapering to a long sharp point, and also usually narrowed towards the base; either entire, or sparingly serrate with sharp spreading teeth. The heads are barely middle-sized, but showy: the rays light blue. The scales of the involucre in our plant, as in several of the cultivated forms before us, are narrowly linear, loose, in about 3 series, nearly equal; the long and slender green tips recurved-spreading. Those of var. β. are more unequal, broader, more obtuse, loose, but less spreading. Achenia minutely pubescent.—A. squarrulosus, *Nees*, has apparently been derived from this species.

62. *A. Elliottii:* stem stout, very smooth and glabrous, the upper portion and the paniculate branches minutely and softly pubescent in decurrent lines; leaves somewhat coriaceous, smooth beneath, more or less scabrous above, serrate with appressed mucronulate teeth; the cauline ones oblong-lanceolate or spatulate-lanceolate, somewhat acuminate, tapering into an attenuate base (like a margined petiole), partly clasping but not dilated at the insertion; those of the branches short, spatulate, oblong, or oval-lanceolate, serrulate; heads (middle-sized) corymbose-paniculate; scales of the obovate involucre linear-subulate, somewhat equal, numerous, in about 3 series, nearly the length of the disk, their summits usually spreading or recurved; rays numerous, slender.—A. puniceus, *Ell.! sk.* 2. *p.* 255, (excl. spec. char.)

Margin of rivers, in the low country of Georgia and South Carolina, *Elliott! Miss Clay!* North Carolina, *Mr. Croom! Mr. Curtis!* Oct.–Nov.—A stout plant, 2–3 feet high, with a somewhat angled stem, and numerous often crowded and rather simple flowering branches; the heads either racemed, or more commonly paniculate or corymbose at the summit. Cauline leaves 4–6 inches long, an inch or less in width, of a rigid texture, pale when dry, and not lucid, with a very strong midrib; those of the branches small, much less tapering at the base, abruptly acuminate or mucronate-acuminate, nearly all serrulate with sharp closely appressed teeth. Scales of the involucre very narrow (narrower than in any state of A. puniceus) and acute, somewhat ciliate, all similar. Rays long and narrow, "bright purple" (*Ell.*), in dried specimens appearing reddish-purple or pink; the disk-flowers apparently not changing to purple. Achenia very slightly pubescent under a lens. Pappus tawny when old.—We cannot ascertain that this species has been noticed by any author except Elliott, who has in fact described it as a distinct species, under A. puniceus. It should be placed between the latter and A. Novi-Belgii, which it more nearly resembles in the foliage, while the involucre, rays, &c. are very different. We have never observed the young leaves pubescent, as described by Elliott.

63. *A. puniceus* (Linn.): stem hispid, stout, paniculate above; leaves oblong-lanceolate, clasping by a more or less auriculate base, acuminate, serrate in the middle with mucronate-acute mostly appressed teeth, scabrous above, usually smooth and glabrous beneath (except the sometimes scabrous-hispid midrib); heads (pretty large) racemose or paniculate towards the summit of the leafy branches; scales of the involucre narrowly linear or subulate-linear, acute, loose, equal, in about 2 series, as long as the disk, more or less spreading; a few of the exterior (especially in the terminal heads) often broader, more foliaceous (linear-lanceolate) and bracteolate;

rays numerous, showy.—*Linn.! hort. Cliff. p.* 408, *& spec.* 2. *p.* 875; *Ait. Kew.* (*ed.* 1) 3. *p.* 208; *Michx.! fl.* 2. *p.* 115; *Willd. spec.* 3. *p.* 2040; *Pursh! fl.* 2. *p.* 554; *Hook.! fl. Bor.-Am.* 2. *p.* 10; *Darlingt.! fl. Cest. p.* 465; *DC.! prodr.* 5. *p.* 236. A. Americanus latifolius, puniceis caulibus, *Herm. Lugd. p.* 649, *t.* 651. A. hispidus & A. amœnus, *Lam. dict.* 1. *p.* 306, fide *Michx. & Nees.* A. altissimus, *Mill. dict.*—Varies; with the stem (which is commonly purple, and densely hispid with rough and short spreading pointed hairs,) sometimes rather hirsute with longer and softer hairs, and sometimes more sparsely hispid ~~or in~~ lines, or below only hispid-scabrous: in size, 3–6 feet high; or rarely 1–2 feet high (A. puniceus, *var.* demissus, *Lindl. bot. reg. t.* 1636): in the size of the heads equalling A. Novæ-Angliæ, especially when scattered; or considerably smaller; frequently very numerous and corymbose-paniculate: the leaves varying from rather narrowly lanceolate to oblong-lanceolate or oblong, or the lower even obovate-oblong; either narrowed near the base, or cordate-clasping; the teeth scattered or more numerous, small, sometimes obscure, occasionally conspicuous; their texture, when growing in shade, thin and then moderately scabrous above; in exposed situations thicker, very scabrous above, and even somewhat so beneath.

β. firmus: stem lower, stout, often angled, smooth and glabrous below, towards the summit slightly hairy or hispid, either sparsely or in lines; leaves moderately or slightly scabrous above; exterior scales of the involucre rather broader and more foliaceous; "rays bluish-lilac."—A. firmus, *Nees, Ast. p.* 66 (v. sp. *in hort. Berol.*); *DC. prodr.* 5. *p.* 235, excl. syn. *Ell.!* A. vimineus, *Lindl.! in Hook. fl. Bor.-Am. l. c.* in part. (Lake Huron, *Dr. Todd!* Stem a little more hairy.)

γ. vimineus: stem smooth and glabrous below; somewhat pubescent or hispid in lines near the summit and along the branches; leaves lanceolate, attenuate-acuminate, usually minutely and sparingly serrate towards the middle, clasping by the auriculate base, more or less scabrous above, very glabrous beneath; exterior scales of the involucre rather broader and more foliaceous.—A. vimineus, *Willd. spec.* 3. *p.* 2046, fide *Nees*, (not of *Lam.*); *Spreng. syst.* 3. *p.* 538 (excl. syn.); *Nees, Ast. p.* 68; *DC. l. c.*; *Lindl.! in herb. Torr.*—Varies; with the stem (pale or purple, often angled, usually branching in a pyramidal or thyrsoid manner) either almost entirely glabrous, or more or less hispid in lines, or even with scattered bristly hairs; the branches all short, ascending (A. vimineus *β.* Nees; leaves smooth above); or the lower ones elongated; the leaves (mostly 4–6 inches long and 5–10 lines wide) sometimes nearly smooth above, &c.

Low grounds and swampy thickets, Canada! (from Hudson's Bay) and rather common throughout the Northern States! Sept.–Oct.—A well-marked species, varying somewhat in appearance when it grows in wet shady places. We are perfectly satisfied that A. firmus and A. vimineus of Nees are only varieties or states of this species: the latter is a form which the plant assumes in deep shade; and we have seen specimens with the stem quite as hispid as in ordinary states of A. puniceus, and even with the midrib beneath pubescent with the same kind of hairs. We also consider the A. luxurians *β. Lindl.! in Hook. fl. Bor.-Am. l. c.* (Canada, *Mrs. Percival!*) to be a state of this species.—The leaves are ordinarily pretty large and uniform. The rays are numerous, rather large, violet-purple, varying in shade to pale lilac-blue; the disk turning purplish or brownish; the achenia minutely and sparsely pubescent.

64. *A. prenanthoides*)Muhl.): stem pubescent or hirsute above mostly in decurrent lines, paniculate-corymbose at the summit; leaves spatulate-lanceolate or lanceolate-oval, incisely serrate in the middle with sharp spreading teeth, conspicuously acuminate, tapering into a long narrow base like a winged petiole, with a cordate-clasping insertion; the lower surface smooth,

the upper scabrous; heads on short and rather rigid spreading peduncles; scales of the obovoid involucre narrowly linear, acute or acuminate, unequal, imbricated in 3 or 4 series, with recurved-spreading herbaceous summits.—*Muhl.! in Willd. spec.* 3. *p.* 2046; *Pers. syn.* 2. *p.* 446; *Nees, Ast. p.* 61; *Darlingt.! fl. Cest. p.* 465; *DC. prodr.* 5. *p.* 234.

β. *scaber:* stem sparsely roughish-hirsute, or even hispid above; leaves less conspicuously attenuate towards the base, the upper surface very scabrous.

Moist woods and thickets, Western New York! Pennsylvania! Ohio! Kentucky! and probably throughout the Alleghany Mountains. β. West-Chester, Pennsylvania, *Darlington, Mr. Townsend!* (in *herb. Hook.*) Sept.-Nov.—Stem 1–4 feet high, angled, rather stout, usually pubescent only in decurrent lines, or entirely glabrous below, bearing few or numerous pretty large heads, in a terminal loose and expanding, simple or compound, or somewhat paniculate corymb. Leaves of a membranaceous rather firm texture, veiny, lively green above, pale beneath, and frequently a little hairy along the midrib; the lower cauline 5–6, or even 8–10, inches long, the attenuate lower portion 2–3 inches long, entire, not ciliate, more or less dilated and auriculate-cordate at the insertion; the uppermost, and those of the branches smaller, and less narrowed below, less serrate, but otherwise similar; those of the branchlets often linear and entire. Involucre glabrous, or minutely pubescent under a lens. Rays rather large, pale violet, or in deep shade nearly white; the disk turning purplish. Achenia narrow, slightly cuneiform, a little narrowed at the summit, contracted at the base as if somewhat stipitate, scabrous-pubescent. Pappus unequal.—A very marked species, imperfectly characterized by Willdenow, but accurately described by Nees from dried specimens. It has never found its way into the gardens, and appears to be known to few botanists; yet, it is not uncommon within the geographical range we have given. Distinct as the species certainly is, the var. β. (as Dr. Darlington has noticed) makes a near approach to A. puniceus, and appears like a hybrid between the two.

65. *A. mutatus:* stem hairy, racemose-corymbose; the branches simple, fastigiate, glandular-pubescent at the summit, terminated by single heads; leaves (membranaceous) lanceolate, very acute, slightly and remotely serrate, pubescent both sides, partly clasping, the upper clasping by a broad base; scales of the hemispherical involucre narrowly linear-lanceolate, very acute, foliaceous, loose, nearly in a single series, as long as the disk; rays numerous.—A. Unalaschkensis β.? major, *Hook.! fl. Bor.-Am.* 2. *p.* 7.

Saskatchawan to the Rocky Mountains, *Drummond!*—Stem about 2 feet high, pubescent with loose spreading hairs; the branches slender, erect. Leaves very thin, 3–4 inches long, tapering to a sharp point; those of the branches smaller but similar, broader at the base and more clasping. Heads about as large as in A. puniceus; the scales of the almost simple involucre somewhat pubescent, loose or spreading. Rays (blue or pale purple?) about 30, rather narrow, much longer than the disk. Appendages of the style lanceolate. Achenia (immature) compressed, ribbed, minutely pubescent with scattered appressed hairs.—This plant has the involucre of an Alpigenous Aster, but the receptacle is alveolate, &c.

* * * * * * * * * * * *Heads (large and showy) terminating the corymbose or paniculate branches: scales of the involucre numerous, in 2–several series, somewhat equal; the short rather rigid base appressed; the elongated foliaceous upper portion spreading or squarrose: achenia villous or canescent, rarely glabrous: pappus slightly rigid: rays numerous, purple or violet: leaves lanceolate or linear-oblong, mostly entire, sessile, often partly clasping: branchlets and involucre often glandular, viscid, or granular-puberulent.*—Grandiflori.

† Scales of the involucre imbricated, with squarrose-reflexed foliaceous summits.

66. *A. grandiflorus* (Linn.): hispid with sharp rough hairs; stem stout, racemosely branched or compound; leaves linear-spatulate, obtuse, mucronulate, closely sessile, reflexed or recurved, very rough, numerous; those of the branches small, oblong-linear or lanceolate; heads (very large) solitary, terminating the branches; scales of the involucre similar to the uppermost leaves, imbricated in several series, the summits squarrose-reflexed; achenia strigose-hirsute.—*Linn. spec.* 2. *p.* 877; (*Gronov.! fl. Virg. ed.* 1. *p.* 99; *Mill. ic. t.* 282;) *Hoffm. phytogr. bl. p.* 65, *t. A, f.* 1; *Michx.! fl.* 2. *p.* 111; *Pursh, fl.* 2. *p.* 550; *Ell. sk.* 2. *p.* 344; *Lindl. bot. reg. t.* 273; *Nees, Ast. p.* 50; *DC.! prodr.* 5. *p.* 232. A. grandiflorus asper, squamis reflexis, *Dill. Elth. t.* 36, *f.* 41. A. asperrimus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 293.

Dry soil, in the mountains and upper country of Virginia! North Carolina! and Georgia! apparently not common; cultivated for more than a century in European gardens. Sept.–Nov.—Stem and branches rigid. Leaves very small in proportion to the heads; the lower 1–2 inches, those of the branches often less than half an inch in length, thickish, somewhat papillose, and hispid with very sharp rigid hairs. Heads of the cultivated plant perhaps the largest of the genus; in indigenous specimens frequently not larger than in A. spectabilis, slightly viscid. Scales of the involucre much more numerous in the cultivated than in the indigenous plant, and with longer and narrower squarrose foliaceous appendages, slightly viscid; the chartaceous base appressed. Rays large, violet.—In habit, the wild plant approaches the section Calliastrum.

67. *A. Carolinianus* (Walt.): minutely or canescently pubescent; stem suffrutescent, much branched, diffuse or decumbent, flexuous; the heads somewhat racemose or scattered; leaves oblong-lanceolate, entire (or serrate on the sterile branches), attenuate to each end, very sharply acuminate, the narrowed base abruptly dilated and auriculate-clasping at the insertion; scales of the involucre linear, canescent, imbricated in several series, unequal, with short foliaceous squarrose-reflexed tips; achenia narrow, ribbed, glabrous.—*Walt. Car. p.* 208; *Michx.! fl.* 2. *p.* 111; *Pursh, fl.* 2. *p.* 550; *Nutt.! gen.* 2. *p.* 156; *Ell.! sk.* 2. *p.* 353; *Nees, Ast. p.* 48; *DC.! prodr.* 5. *p.* 232. A. scandens, *Jacq. f.*, *in Spreng. syst.* 3. *p.* 524.

In swamps and moist thickets, South Carolina! to Georgia! and Florida! Sept.–Oct.—Stem often trailing or supported by other plants, and attaining the height of 8 to 12 feet, very pubescent when young, not viscid nor glandular; the showy heads (as large as in A. patens) mostly solitary on short branchlets or peduncles, scattered. Leaves 1 to 3 inches long, clothed with a minute and close soft pubescence, or nearly canescent when young, or the upper surface slightly scabrous when old, produced to a very sharp acuminate point; the lowermost narrowed towards the base, as if petioled, but dilated at the insertion. Scales of the involucre rather rigid, not glandular or viscid, appressed except the squarrose tips; the exterior shorter and with the short tips slightly dilated; the interior narrowly linear, as long as the disk. Rays bright purple (*Ell.*), or often purplish rose-color, numerous; the disk turning purplish. Achenia linear, 10-ribbed, slightly puberulent when young, but perfectly glabrous when mature. Pappus turning reddish-brown.—The leaves of the young sterile branches are sometimes coarsely toothed.

68. *A. oblongifolius* (Nutt.): stem much branched, diffuse or divaricate, somewhat hairy; the branchlets loose, paniculate-corymbose, and with the involucre and uppermost leaves more or less glandular or granular-scabrous; leaves narrowly oblong or lanceolate, mucronulate-acuminate, entire, partly clasping, somewhat scabrous; scales of the involucre numerous, broadly linear, somewhat unequal, appressed at the base, with elongated and squar-

rose foliaceous summits; achenia canescent.—*Nutt.! gen.* 2. *p.* 156, *& in trans. Amer. phil. soc. l. c.; Nees, Ast. p.* 48; *Hook.! compan. to bot. mag.* 1. *p.* 97; *DC.! prodr.* 5. *p.* 232. A. graveolens, *Nutt.! in jour. acad. Philad.* 2. *p.* 110, *& in trans. Amer. phil. soc. l. c.*

Rocks along rivers, and on dry prairies, from the upper Mississippi! and Missouri! to Arkansas! Kentucky! and Illinois! Sept.–Oct.—Stems numerous from the same root, often suffruticose at the base, rigid, erect or ascending, much branched, 1–2 feet high, somewhat hirsute or nearly glabrous below: the branches, young leaves, and involucre covered, more or less abundantly, with minute resinous and somewhat viscid granules, on which account the plant exhales a heavy odor. Leaves 1 to 2 inches long, varying from 2 to 5 lines in breadth, often nearly linear, abruptly acute or mucronate, pale, rather rigid, reticulated, more or less scabrous with minute strigose hairs, particularly on the margins which are sometimes scabrous-ciliate; the upper ones more manifestly sprinkled with resinous dots, which are frequently pedicellate, so as to appear like glandular hairs; those of the branchlets small, often crowded, gradually passing into the scales of the involucre. Heads very numerous, scarcely as large as in A. Carolinianus; the scales of the involucre with more or less prolonged foliaceous summits, which are squarrose-spreading or at length reflexed; all equal in length, or the exterior somewhat shorter. Rays purple or violet. Achenia canescent with a fine closely appressed pubescence. Pappus brownish.—The numerous specimens before us afford no characters to distinguish the A. graveolens from the A. oblongifolius of Nuttall.

69. *A. amethystinus* (Nutt.): hirsute with a close somewhat cinereous pubescence; stem racemose-paniculate; leaves numerous, linear-lanceolate, entire; strigose-scabrous, acute, partly clasping by a dilated or auriculate base; scales of the involucre somewhat equal, not glandular or viscid, linear, acute, erect, with squarrose foliaceous tips; achenia silky.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 294.

Near Boston and Salem, Massachusetts, *Nuttall! Mr. Little!* Sept.?—We have only seen branches; with leaves about an inch long, about 2 lines wide, thickish, minutely reticulated, pale, strigose under a lens: the numerous racemose branchlets are furnished with similar leaves of a smaller size, and bear one to three or four heads, scarcely half the size of those of A. Novæ-Angliæ. Involucre about the length of the disk; the scales minutely strigose; the exterior slightly spatulate, the lower whitish portion somewhat narrowed; the innermost rather longer and more attenuated. Rays numerous, azure according to Nuttall, appearing violet in dried specimens. Pappus turning brownish.—Resembles A. oblongifolius.

† † Scales of the involucre loose, very narrow (glandular-viscid), appearing as if nearly in a single series.

70. *A. Novæ-Angliæ* (Linn.): stem stout, hispid, corymbose at the summit; the branchlets and involucre somewhat viscid; leaves very numerous, lanceolate or lanceolate-linear, auriculate-clasping, entire, acute, clothed with a close somewhat scabrous pubescence; scales of the involucre narrowly subulate-linear, lax, equal, as long as the disk; achenia villous-hirsute.—*Linn. hort. Cliff. p.* 408, *& spec.* 2. *p.* 875; *Ait. Kew.* (*ed.* 1) 3. *p.* 201; *Michx.! fl.* 2. *p.* 113; *Pursh, fl.* 2. *p.* 549; *Nutt.! gen. p.* 156; *Ell.! sk.* 2. *p.* 351; *Lindl. bot. reg. t.* 183; *Bigel. fl. Bost. ed.* 2. *p.* 310; *Nees, Ast. p.* 46; *Hook.! fl. Bor.-Am.* 2. *p.* 8; *Darlingt.! fl. Cest. p.* 462; *DC.! prodr.* 5. *p.* 231. A. Novæ-Angliæ altissimus, &c., *Herm. parad. Batav. t.* 98. Asterophолis, *Pont. diss. p.* 242. A. amplexicaulis, *Lam. dict.* 1. *p.* 304; not of *Willd.*, nor of *Michx.* A. spurius, *Willd. spec.* 3. *p.* 2032; *Nees, synops. p.* 20.

Low or moist grounds, Canada and Northern States! to Missouri! Kentucky! and the upper districts of the Southern States! Sept.–Oct.—Stem 3–8 feet high, mostly purple, hirsute with spreading sharp jointed hairs; the summit and branches furnished besides with a more or less copious close granular-viscid pubescence, which also clothes the pedicels and the involucre, and exhales a faint resinous odor. Leaves 2–4 inches long, about half an inch wide, finely reticulate-veined, often somewhat 3-nerved; the lower more obtuse; those of the flowering branches often tinged with purple, like the involucre. Heads in a short thyrsus or corymb, or in compound somewhat paniculate corymbs, often an inch and a half in diameter, including the large and very numerous violet-purple rays; the latter sometimes rose-color in cultivation (A. roseus, *Desf. cat. hort. Par.*); the disk turning slightly purplish. Scales of the involucre numerous in 2–3 series, but similar in size and form, lax, and very narrow, so that the involucre appears nearly as simple as an Alpigenous Aster, attenuate from the short chartaceous appressed base to the apex; or the outermost almost entirely foliaceous.—A handsome and well-known species, of very uniform appearance in its native situations, but several varieties have resulted from long cultivation in the European gardens. To this, or to A. puniceus, probably belongs the A. concinnus, *Colla, hort. Ripul. appx.* 3, *in act. acad. Tur.* 33. *p.* 134, *t.* 12, which De Candolle has incautiously cited under A. concinnus, *Willd.*

71. *A. modestus* (Lindl.): stem glabrous below, the summit and the peduncles, or branches of the simple corymb, glandular-pubescent; leaves numerous, lanceolate, acuminate, sparingly and sharply serrate, glabrous, partly clasping; scales of the involucre linear-lanceolate, acute, lax, equal, about the length of the disk; achenia pubescent.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 8, *& in DC. prodr.* 5. *p.* 231.

β. branches of the corymb longer and somewhat leafy; scales of the involucre rather shorter.—A. Sayianus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 294.

Mountain woods at the mouth of Smoking River, lat. 56° (near the Rocky Mountains), *Drummond!* *β.* Forests of the Rocky Mountains (lat. 42°?), and plains of the Oregon, *Nuttall!*—Stem about a foot high, simple. Leaves about 3 inches long, less than an inch wide, serrate with small often spreading teeth; the uppermost clasping by a broad base; the lower somewhat narrowed at the base and less clasping. Heads few, resembling those of A. Novæ-Angliæ; the scales of the involucre fewer and rather broader, somewhat glandular. "Rays pale blue," *Nutt.* Achenia 10-ribbed, pubescent, especially on the ribs, both in *α.* and *β.*, which differ very slightly.

⁂ Several insufficient specimens of undetermined species remain in our collections, or in those submitted to our examination: we think it better to leave them unnoticed than to describe from imperfect materials, which is very hazardous in such a genus as the present.

‡ *Species unknown to us, founded on native specimens.*

72. *A. cærulescens* (DC.): stem erect, smooth; branches erect, leafy, racemose; leaves sessile, about half-clasping, broadly linear or lingulate, acute somewhat coriaceous, entire, almost smooth, the margins and midrib beneath scabrous; those of the branchlets (which bear single heads) gradually passing into the oblong acute loosely imbricated and slightly squarrose scales of the involucre. *DC. prodr.* 5. *p.* 235. = Carneus [illegible]

Texas, in the eastern districts, *Berlandier.*—Cauline leaves 3 to 4 inches long, 4 lines broad. Heads as large as in A. puniceus; the rays pale-blue. Achenia almost glabrous. Pappus reddish-brown, *DC.*—The species is placed next to A. puniceus.

73. *A. multiceps* (Lindl.): glandular-pubescent throughout; stem racemose; the branches erect, bearing single heads; leaves oblong-linear, acute, pubescent, slightly scabrous; scales of the involucre linear, subulate, whitish at the base, squarrose. *Lindl. in DC. prodr.* 5. *p.* 237.

Louisiana.—A very distinct species, not closely allied to any one known; perhaps of the Amelli section, if the inner scales of the involucre were membranaceous and colored. *Lindl.*—We know not from whom this species was derived. It is placed at the end of the section which includes A. puniceus, præaltus, &c.

74. *A. subspicatus* (Nees): stem hairy in lines; the branches virgate; the branchlets hirsute, bearing the heads somewhat in spikes; leaves oblong-lanceolate, acute, appressed-serrate, glabrous, with scabrous margins, clasping; scales of the involucre somewhat equal, lax; the exterior spatulate-lanceolate, broader. *Nees, Ast. p.* 75; *DC. prodr.* 5. *p.* 237.

Mulgrave Promontory, on the North West Coast of America. (*Nees.*)—Heads of the size and form of those of A. obliquus, 3–7 upon each branchlet, nearly sessile (on hirsute pedicels scarcely half a line long) in the axils of the upper leaves, approximate, solitary, or 2 to 3 on the highest branchlets. Involucre as long as the disk, erect, loose; the scales in several series; the inner linear-lanceolate, mucronate-acute, ciliate; the base membranaceo-chartaceous, pale, with a green nerve which is lanceolate-dilated upwards. Rays numerous, lanceolate, purplish; the disk-flowers turning rose-color: 'stigmas short, dimidiate-conic, scabrous.' Achenia small, obconic, densely canescent-strigulose. Pappus brownish. *Nees.*—It is placed in the same section with A. Novi-Belgii, &c.

75. *A. blandus* (Pursh): stem pyramidate-branched; the branches axillary, scarcely longer than the leaves, bearing the heads in racemes; peduncles tomentose, naked; leaves oblong-lanceolate, partly clasping, acuminate, serrate, glabrous; scales of the involucre lax, somewhat equal, shorter than the disk. *Pursh, fl.* 2. *p.* 555; *DC. prodr.* 5. *p.* 237.

Canada, *Herb. Banks.* ♃ Oct.–Nov. Flowers above the middle size: rays pale purple. *Pursh.*—Nothing farther is known respecting this species. The A. blandus, *Lodd. bot. cab. t.* 959 (perhaps A. puniceus?) is doubtless different from Pursh's plant.

76. *A. hebecladus* (DC.): stem slightly shrubby, slender, hirsute with a close spreading pubescence; branches loose, leafy, with few branchlets bearing single heads; leaves sessile, linear, entire, mucronate-acute, both sides villose-scabrous; the uppermost ciliate; scales of the involucre loosely imbricated, linear, puberulent, acute. *DC. prodr.* 5. *p.* 242.

Texas, in the eastern districts, *Berlandier.*—Allied to A. scoparius, but with looser hirsute branches, bearing few heads about one-third the size. *DC.*

77. *A. scoparius* (DC.): stem slightly shrubby, erect, much branched, glabrous, scarcely puberulent at the summit; branches erect, racemose; leaves sessile, linear, minutely scabrous, the upper ones ciliate; branchlets leafy; scales of the involucre loosely imbricated, linear, acute, ciliate. *DC. prodr.* 5. *p.* 242.

Texas, in the eastern districts, *Berlandier.*—Plant with nearly the habit of Erica scoparia. Leaves 4–5 lines long, half a line wide. Pappus reddish-brown. Achenia puberulent. *DC.*—This and the preceding are placed in the same section with A. ericoides, A. dumosus, &c.

78. *A. bifrons* (Lindl.): stem scabrous, lax, racemose; branches racemose at the summit; leaves oval-lanceolate, scabrous above, nearly all serrate; heads secund; scales of the involucre subulate. "*Nees in litt. ad Lindl.*"; *DC. prodr.* 5. *p.* 243.

North America.—Allied to A. pendulus; distinguished by the branches bearing fewer and larger heads. *Lindl.*—Apparently described from indigenous specimens; most probably one of the larger forms of A. miser.

79. *A. reticulatus* (Pursh): canescently tomentose throughout; stem branching above, the branches corymbose-racemose at the summit; peduncles nearly leafless; leaves lanceolate-oblong, sessile, acute at each end, with revolute margins, beneath reticulate-veined, tripli-nerved; involucre rather loosely imbricated; the scales very acute. *Pursh, fl.* 2. *p.* 548.

In dry swamps of Carolina and Georgia. ♃ Aug.–Oct.—About 3 feet high: flowers middle-sized: rays and florets white. *Pursh.*—This plant has not been identified by any succeeding botanist; and notwithstanding the accustomed *v. v.* of Pursh, we believe that he never travelled in Carolina and Georgia. It probably belongs to some other genus.

80. *A. ciliatus* (Walt.): leaves lanceolate, entire, ciliate; stem 3 feet high; heads large (purple), somewhat solitary; peduncles leafy. *Walt. Car.* *p.* 209.

South Carolina, *Walter.*—The subsequent A. ciliatus of Willdenow is only a form of A. multiflorus; but this is apparently altogether a different species.

A. leucanthemus of Rafinesque ("Leaves semi-cuneiform, incised-serrated; flowers terminal; crown semi-10-flosculous." *Raf. in med. repos.* (*hex.* 2) 5. *p.* 359. Virginia.) is doubtless not the A. leucanthemos, *Desf. Nees, &c.*

‡ ‡ *Species described from garden specimens (some of them of doubtful origin), which we have not identified with native plants.*

81. *A. auritus* (Lindl.): stem racemose-compound; the branches rigid, densely racemose at the summit; leaves oblong, acuminate, cordate and clasping at the base, smooth above, pubescent beneath; scales of the slightly imbricated involucre linear, acuminate, glandular, as also the branchlets. *Lindl.! in DC. prodr.* 5. *p.* 232.

"North America? Cultivated, but rarely, in the English gardens. Near A. patentissimus." *DC.*—Apparently a cultivated state of A. patens *var.* phlogifolius.

82. *A. præcox* (Willd.): stem racemose; the branches bearing few heads, naked at the base; leaves ovate-lanceolate, serrate with spreading teeth, acuminate, tapering into an adnate [winged] petiole, glabrous, the margins scabrous, ciliate towards the base; the radical ones ovate and petioled; scales of the involucre lanceolate, acute, loose, nearly equal, erect; achenia pubescent. *Nees.* (char. & descr.)—"*Willd. enum. hort. Ber. suppl. p.* 58"; *Link, enum.* 2. *p.* 328; *Nees, Ast. p.* 63; *DC. prodr.* 5. *p.* 235.

North America (?): described from a plant cultivated in the Berlin garden. July–Aug.—We have gathered specimens of this apparently well-marked species in the Berlin botanic garden; but we suspect it is not of American origin. The A. præcox of Lindley (in *Hook. fl. Bor.-Am.*) bears considerable resemblance to it, but belongs, in our opinion, to a different species.—The A. præcox and the two following species belong to the section Petiolati of Nees: 'Leaves rather broad, serrate; the radical and lower cauline tapering into a petiole; the upper cauline also narrowed at the base, but sessile.' The cauline leaves of this species are 3 to 4 inches long, an inch or less in width, acuminate or attenuate at each end, serrate with unequal and remarkably spreading subulate-pointed teeth, and ciliate with very short and scattered rough hairs along the contracted base. The heads are about as large as in A. acuminatus; the scales of the involucre barely in a double series, rather firm, shorter than the pappus. The rays are pale lilac. The stem is glabrous or slightly pubescent, 1 to 2 feet high.

83. *A. abbreviatus* (Nees): stem erect, glabrous, or hairy in lines, racemose; the branches short, thyrsoid or simple; lower leaves oval-lanceolate, serrate, adnate-decurrent along the petiole, scabrous above, smooth beneath; the upper oblong-lanceolate and somewhat entire; scales of the involucre loosely imbricated, lanceolate-linear. *DC.—Nees, synops. p.* 16; *DC. prodr.* 5. *p.* 234. A. Cornuti, *Mull.* ex *Nees.* A. acuminatus, *Nees, Ast. p.* 60, not of *Michx.* &c. (Varies with the branches short or elongated. Rays pale blue. *DC.*)

North America? (obtained by Nees, in the year 1802, from the Marburg garden.) Sept. (v. sp. in. *hort. Berol.*)—Nees has strangely confounded this species with the widely different A. acuminatus, *Michx.* It resembles A. præcox, and is also compared with the following species. The lower leaves are scabrous and tapering to the base, while the uppermost are smooth and closely sessile by a broad base. *Perhaps it is not of American origin.

84. *A. patulus* (Lam.): stem glabrous, racemose-paniculate; the branches spreading; leaves oblong, deeply serrate, tapering into a petiole; the upper surface glabrous, or rough with a very minute pubescence; the lower glabrous; the margins scabrous; involucre imbricated [achenia glabrous]. *DC.* —*Lam. dict.* 1. *p.* 308; *Desf.! cat. hort. Par. p.* 102; *DC.! prodr.* 5. *p.* 234. A. paniculatus, *Willd. spec.* 3. *p.* 2035 (in part), fide *Nees.* A. Tradescanti, *Hoffm. phytogr. bl. p.* 68, *t. D. f.* 2, fide *Nees.* A. Cornuti, *Wendl. in Nees, Ast. p.* 58.

β. rays pale; leaves somewhat glabrous. *DC. l. c.* "A. pallens, *Willd. enum. suppl. p.* 58; *Lindl. bot. reg. t.* 1509," ex *DC.* A. Cornuti *β. Nees, l. c.* (v. sp. ex *hort. Par.* & *hort. Berol.*)

North America.—This is doubtless of American origin, and was perhaps derived from Canada; but we have never met with an indigenous specimen: the A. Cornuti, *Hook. fl. Bor.-Am.* appears to be only a state of A. miser; and is certainly different from the plant cultivated under that name in the Berlin garden.—The cultivated plant has much the habit of A. cordifolius, &c., except that none of the leaves are cordate. Stem 2 to 3 feet high, glabrous; the spreading paniculate branches somewhat pubescent in lines; the heads mostly solitary on the branchlets. Leaves all very sharply serrate, with more or less incurved teeth; the lowermost elliptical, tapering into a channelled petiole, acute, the base and apex entire; the upper oblong and oblong-lanceolate, much acuminate, narrowed below, sometimes into a short margined petiole; those of the branches sessile. Heads middle-sized. Scales of the involucre imbricated in 3 to 4 series, somewhat unequal, subulate linear, acute. Rays numerous, narrow, blue according to De Candolle, flesh-color turning purplish according to Nees. Achenia perfectly glabrous.

85. *A. stenophyllus* (Lindl.): stem nearly glabrous, racemose; the branches spreading, very densely racemose at the summit; cauline leaves linear-lanceolate, much acuminate, rather scabrous; heads secund; scales of the involucre linear, acuminate; the inner membranaceous and colored. *Lindl. in DC. prodr.* 5. *p.* 243.

North America? Cultivated in the English gardens.—Rays pale flesh-color; the disk changing. *Lindl.*—Placed between A. diffusus and A. miser.

86. *A. obliquus* (Nees): stem glabrous below, racemose-compound above, strict; the branches somewhat corymbose at the summit; leaves linear-lanceolate, sessile, mucronate, somewhat entire, scabrous above, oblique; those of the branches spreading; involucre lax; the exterior scales larger, spatulate-lanceolate, speading. *Nees, Ast. p.* 76; *DC. prodr.* 5. *p.* 237. A. rigidulus, *Desf. cat. hort. Par.* (1815) *p.* 122, fide *Nees* & *DC.*

North America. New York, *Bernhardi*, ex *Nees*.—Heads small, lilac and white. Exterior scales of the involucre few, 1–2, linear-spatulate, exceeding or equalling the others, which are linear, nearly equal, and with a membranaceous margin. Achenia pubescent-scabrous.—This, to us extremely obscure species, is placed by Nees between A. blandus and A. hiemalis, and is considered to be the A. lanceolatus of American authors. Nees has a wild specimen from New York, but we cannot identify the plant.

87. *A. æstivus* (Ait.): leaves lanceolate, somewhat clasping, entire, glabrous, with scabrous margins; scales of the lax involucre equal; stem (2 feet high) hispid; rays blue. *Ait. Kew.* (*ed.* 1.) 3. *p.* 203.

"Labrador Starwort. Native of North America. Introduced, 1776, by Messrs. Gordon & Græffer. July–Aug." *Ait. l. c.*—Willdenow gives the following character: "Leaves lanceolate, somewhat clasping, entire, attenuate at the apex, the margins scabrous; stem branched from the base, erect; branchlets hairy; scales of the involucre lax, linear, acute, equal;" and he remarks that it is nearly past flowering when the other American species commence. Pursh, who copies the character of Willdenow, professes to have seen the plant in dry swamps and copses in New York and Pennsylvania, as well as dried specimens in the Banksian herbarium and that of Mr. Lambert. Nees, who describes both from spontaneous and cultivated specimens (although the origin of the former is not mentioned), gives the following character: "Leaves lanceolate, ciliate; the radical appressed-serrate; the cauline entire; stem (glabrous) paniculately branched or racemose; the branchlets loose, scattered, one-flowered; inner scales of the narrow obconic involucre subulate." *Nees, Ast. p.* 74. It often begins to flower, according to Nees, in the middle of the month of June. The heads are said to be small; the rays nearly white; the achenia puberulent and narrowed into a stipe. We have not been able to identify either the original species of Aiton, or that of Nees (which are probably different) with indigenous specimens; nor do we possess specimens of the cultivated plant.

88. *A. foliolosus* (Ait.): stem pubescent; leaves lanceolate-linear, entire, glabrous; those of the branches much spreading; involucre imbricated, the scales acute. *Ait. Kew.* (*ed.* 1) 3. *p.* 202. A. ericoides Meliloti agrariæ umbone, *Dill. Elth. p.* 39, *t.* 35, *f.* 39. A. hiemalis, *Nees, Ast. p.* 77? (A. salicifolius, *Nees, synops. p.* 26.)

North America: Cult. 1732, by James Sherard, M. D. *Hort. Kew.*—The A. foliolosus of Aiton appears to have been founded upon the plant of Dillenius, which Nees cites under his A. hiemalis, a species of unknown origin. The description of A. hiemalis accords very well with the figure of Dillenius.

89. *A. thyrsiflorus* (Hoffm.): stem racemose-compound, spreading; the branches elongated, spicate-racemose at the summit; leaves linear-lanceolate, attenuate, clasping, the margin scabrous, serrulate; scales of the lax involucre lanceolate, unequal, recurved. *Nees.*—"*Hoffm. phytogr. bl.* 1. *p.* 83, *t. D, f.* 1"; *Nees, Ast. p.* 65; *DC. prodr.* 5. *p.* 235. A. junceus, *Ait. Kew.* (*ed.* 1) 3. *p.* 204? A. recurvatus, *Willd. spec.* 3. *p.* 2047 (chiefly), fide *Nees.*

β. squarrosus (Lindl.): leaves all linear, squarrose-recurved; branches racemose at the summit; heads larger. *Lindl.! in DC. l. c.*

Virginia? (*Hoffman.*) Oct.–Nov.—Cauline leaves linear-lanceolate, acuminate, tapering from the base to the apex, clasping, serrulate in the middle. Heads middle-sized, lilac. Scales of the involucre somewhat equal, linear-lanceolate; the inner colored at the apex. Achenia glabrous. *Nees.* In our specimens (from the English gardens), the heads are large and showy, and the upper leaves nearly or quite entire.—Probably this species (rather than A. longifolius, *Lam.*) is the A. junceus, *Ait.*: we have specimens many years since cultivated under that name in the Liverpool botanic garden.

90. *A. squarrulosus* (Nees): stem corymbose-decompound; the branches erect, corymbose at the summit; leaves lanceolate-acuminate, somewhat clasping, sharply serrate in the middle, the upper surface scabrous next the margins; scales of the ovate involucre narrow, imbricated, with recurved summits. *Nees. Ast. p.* 86; *DC. prodr.* 5. *p.* 239. A. mutabilis, *Linn.?* ex *Nees.* A. spectabilis, *Willd. spec.* 3. *p.* 2048, *&* *enum.* 2. *p.* 886, fide *Nees*; not of *Ait.* A. recurvatus, *Spreng. in Schrad. jour. bot.* 2. *p.* 195, ex *Nees.*

β. albiflorus (Nees, l. c.): taller; rays white becoming somewhat violet; the disk at length deep purple.

North America.—Stem glabrous below. Leaves pale green. Achenia somewhat pubescent. Varies with the lower leaves lanceolate and rather broad, or all linear-lanceolate and narrow. *Nees.*—Under A. eminens, Nees remarks that his A. squarrulosus is perhaps only a variety of that species, but that they have retained their characters in cultivation for many years. The heads of A. squarrulosus are also said to be larger than those of A. eminens, but the rays narrower.—We have met with no native specimens: if it be the A. mutabilis, *Linn.* it has been in cultivation for more than a century. The plant from the Berlin garden has rather large loosely corymbose heads; the scales of the obovate involucre loosely imbricated in 2–3 series, linear, acute, nearly equal; the exterior herbaceous except the very base; the inner more membranaceous; all loose and at length somewhat squarrose-spreading. Achenia narrow, puberulent-scabrous. The cauline leaves are 3 to 4 inches long, 6 to 10 lines wide; the lower narrowed at the base. It appears like a mere variety of A. longifolius.—From this, A. argutus, *Nees*, of unknown origin (described from specimens cultivated in the gardens of Bonn and Breslau), seems not greatly to differ.

91. *A. asper* (Nees): stem paniculate-compound above, glabrous, rough with minute tubercles; the branches racemose-corymbose; leaves oblong-lanceolate, acuminate, partly clasping, scabrous above, all serrate in the middle; scales of the involucre imbricated, with squarrose-spreading summits. *Nees, Ast. p.* 84.

North America? Described from specimens derived originally from the Berlin botanic garden.—Leaves thick, firm, deep green; the cauline considerably attenuate at the base, the margins undulate-reflexed, with 3–6 distant acute teeth in the middle; the apex produced into a long entire acuminate point. Involucre turbinate, half the length of the disk; the scales imbricated in a triple series, linear-spatulate, ciliate; the base appressed, with broad membranaceous margins; the rather obtuse summit green, thickish, squarrose-spreading, somewhat 3-nerved. Rays copious, almost in a double series, pale blue or lilac: the disk yellow, turning brownish. Achenia obovate-cuneiform, obsoletely puberulent. *Nees.*—The species is arranged near A. Novi-Belgii.

92. *A. brumalis* (Nees): stem glabrous, racemose; the heads somewhat solitary on the branches; leaves lanceolate, acuminate, partly clasping, sharply appressed-serrate in the middle, the margins scabrous; scales of the involucre loose, somewhat equal. *Nees, Ast. p.* 70; *DC. prodr.* 5. *p.* 236. A. lævigatus, *Lam. dict.* 1. *p.* 307, fide *Nees.* A. Novi-Belgii & A. serotinus (partly), *Willd. spec.* 3. *p.* 2048, *&* *enum.* 2. *p.* 886, fide *Nees.*

North America? (Indigenous on the banks of the Main near Sickerhausen; probably derived from North America. *Nees.*) Oct.–Nov.—Primordial leaves spatulate, entire, glabrous, with a short and broad petiole, half an inch long; the succeeding oblong and oblong-lanceolate, clasping by the narrowed base; the margin entire or remotely denticulate, somewhat shining, obtuse, with a mucronate point; the others lanceolate, acute, serrulate with minute appressed callous teeth. Heads large: rays blue. Achenia puberulent. *Nees.*—According to Nees, this is the A. Novi-Belgii of many gardens: it has been, perhaps, derived from that species.

93. *A. luxurians* (Nees): stem paniculate; the branches corymbose-racemose at the summit; branchlets bearing single heads; leaves oval-oblong or lanceolate, acuminate, narrowed at the base, clasping, sharply serrate in the middle, scabrous and glaucescent above; scales of the involucre loosely imbricated, linear-lanceolate, acute. *Nees, Ast. p.* 83; *DC. prodr.* 5. *p.* 238. A. prenanthoides, *Nees, synops. p.* 23; *Link, enum.* 2. *p.* 330.

β. stem more compound, and more hairy in lines. *Nees, l. c.*—A. luxurians, *Spreng. syst.* 3. *p.* 538 (excl. syn.), ex *Nees.*

North America? *Sprengel.* (Nees, probably supposing this to be the A. Novi-Belgii of Pursh as well as of Nuttall, has copied from the former the habitat: "In hedges and old fields, New England to Virginia; Aug.–Oct.", although the synonym of Pursh is not adduced. He states also that he has seen native specimens from Virginia.)—Root creeping, stoloniferous. Stem 2 feet or more in height, glabrous or more or less hirsute with decurrent lines, with spreading branches at the summit; the branches corymbose-divided; the branchlets spreading, leafy, bearing single heads. Leaves approximate, 2½ to 3 inches long, an inch wide, sharply but not coarsely serrate in the middle, sessile and somewhat clasping by the narrowed base, smooth and paler beneath, densely but obsoletely reticulated with slender veins; those of the branches and branchlets similar to the cauline ones, but diminished in size, less tapering at the base, and entire. Heads, including the lilac (at length deep violet) rays, an inch in diameter. Involucre shorter than the disk; the scales in several series, erect-imbricate, thickish, unequal, linear-lanceolate, rather broad, acute, the base and ciliate margin thin and whitish, with a spatuliform herbaceous disk. Achenia glabrous. *Nees.*—This appears, as well from the description as from our imperfect (cultivated) specimens, to be perhaps too closely allied to our A. præaltus.

94. *A. adulterinus* (Willd.): stem paniculate-decompound from the base; the branches corymbose-racemed; leaves oblong-lanceolate, mucronate, clasping, smooth, the margin scabrous; scales of the obovate involucre somewhat equal, spatulate-lanceolate, squarrose, enlarged after flowering. *Nees.*—*Willd. enum.* 2. *p.* 884; *Nees, Ast. p.* 85; *DC. prodr.* 5. *p.* 238.

North America. Sept.—Stem 1½ to 2 feet high, hairy in decurrent lines. Leaves lanceolate, clasping, somewhat shining, the lower slightly serrate, with scabrous margins; those of the branchlets nearly linear, squarrose-spreading. Scales of the involucre linear-cuneate, squarrose-spreading. Rays pale violet; the disk yellow, turning brownish. *Willd.*—Heads middle-sized, at first white, then pale violet. Achenia glabrous. Perhaps a variety of A. Novi-Belgii. *Nees.*—The A. adulterinus, *Hook. fl. Bor.-Am.* from the coast of Oregon (*Dr. Scouler!*) is probably a different species; but the specimens are insufficient for satisfactory determination. Our specimen of A. adulterinus from the Berlin garden differs very little from the A. tardiflorus from the same and other gardens.

95. *A. tardiflorus* (Linn.? Nees): stem glabrous, divaricate-corymbose; leaves oblong-lanceolate, obliquely clasping, serrate towards the apex, the margins scabrous; those of the branchlets obtuse; scales of the involucre imbricated, squarrose-spreading, thick; the exterior often elongated and somewhat radiant. *Nees.*—*Linn. spec.* (*ed.* 2) 2. *p.* 1231, ex descr. (but according to Lindley, the plant of the Linnæan herbarium is A. patulus, *Lam.*); *Ait. Kew.* (*ed.* 1) 3. *p.* 209? *Willd. spec.* 3. *p.* 2049; *Nees, Ast. p.* 78; *DC.! prodr.* 5. *p.* 238. A. tardiflorus *β.* cæspitosus, *Lindl.! in DC. l. c.* A.

cæspitosus, *Hort.* A. adulterinus, *Lindl. bot. reg. t.* 1571. Symphotrichium unctuosum, *Nees! Ast. p.* 135.

North America. (?) According to Pursh, it is found "in overflowed grounds from New York to Virginia; rare: Oct.–Nov."—But, notwithstanding the annexed *v. v.* we greatly doubt if Pursh ever met with this plant in North America: the phrase he gives is composed of the Linnæan description combined with that of Aiton.—This species is remarkable for its very corymbose habit, thickish or somewhat succulent very smooth leaves (the upper cauline and those of the branches mostly entire), and the thick and foliaceous exterior scales of the involucre, which resemble the leaves of the branchlets. Heads middle-sized. Rays lilac. Achenia nearly glabrous. Bristles of the pappus slightly united at the base, and separable from the achenium in the form of a ring.

96. *A. mutabilis* (Linn.): leaves lanceolate, serrate; involucre squarrose; panicle somewhat fastigiate. *Linn. spec.* (*ed.* 2) 2. *p.* 1230.

North America.—The specific phrase in the first edition of the Species Plantarum is merely "A. foliis lanceolatis, calycibus imbricatis basi squarrosis"; and the only synonym adduced is, "A. cæruleus Americanus non fruticosus serotinus angustifolius, flore amplo floribundus," *Pluk. alm. p.* 56, *t.* 326, *f.* 1. (which represents a narrow entire-leaved plant with small heads): to this Linnæus adds, that it differs from A. serotinus (but he has no A. serotinus!) in the more closely imbricated involucre, the deep purple rays; and that the disk-flowers, at first yellow, change to purple. In the second edition, Linnæus adds the synonym 'A. Novi-Belgii latifolius paniculatus, floribus saturate violaceis," *Herm. Lugd.* 65. *t.* 67; and compares it with A. Tradescanti, adding to the former remarks, that it may readily be distinguished by the recurved-squarrose leaves of the peduncles and involucre, the exterior scales of the latter not larger than the others.—The A. mutabilis of the Hortus Kewensis is thus characterized: "Leaves somewhat clasping, lanceolate, serrate, smooth, tapering below; branchlets virgate; calyx somewhat foliaceous, lax; stem glabrous." *Ait. l. c.* Nees cites Aiton's plant both under his own A. mutabilis and under a variety of his A. eminens; while he adduces the synonym of Linnæus, with a query, to his A. squarrulosus, which, however, he suspects (*Ast. p.* 89) may be no more than a variety of A. eminens. Our specimen of A. mutabilis from the Berlin garden appears not to differ essentially from the A. squarrulosus of the same garden, except that it is a stouter plant: we have met with no indigenous specimens of either. The A. mutabilis of Lindley, &c., and probably of Nees, we take to be a form of A. lævis.

97. *A. versicolor* (Willd.): stem paniculate-compound; the branches simply corymbose at the summit, dense; leaves oblong-lanceolate, acuminate, very smooth, of the same color both sides; the lower serrate in the middle, the upper clasping, entire; scales of the involucre imbricated, lanceolate. *Nees.*—*Willd. spec.* 3. *p.* 2045, *& enum.* 2. *p.* 885; *Nees, Ast. p.* 127; *DC. prodr.* 5. *p.* 246.

North America, *Willdenow.*—"Upper leaves entire, the lower with a few serratures, glabrous; the radical oblong, tapering at each end, serrate in the middle. Flowers very showy, considerably crowded at the summit of the branches. Disk yellow. Rays large, at first white, afterwards deep violet, so that the plant exhibits both violet and white flowers at the same time, which has a very pleasing effect." *Willd.*—Scales of the involucre, as in A. mutabilis, triangular-lanceolate, narrow. Achenia puberulent. *Nees.*—We have met with no indigenous Aster which accords with the A. versicolor of the Berlin garden; and we know not what plant Pursh had in view, to which he assigns the habitat: "In old fields and on the borders of woods, New Jersey to Carolina." Elliott remarks that the plant which passes under that name has small flowers, and is therefore not so ornamental as Willdenow represents.

98. *A. confertus* (Nees): stem robust, smooth, somewhat corymbose-decompound at the summit; the branches corymbose and much crowded; leaves oblong-lanceolate, acuminate, with a cordate-clasping base, appressed-serrate in the middle, the margins scabrous; involucre imbricate. *Nees, Ast. p.* 126; *DC. prodr.* 5. *p.* 245; not of *Desf.*

North America. (Cultivated in the Botanic garden at Bonn.)—The heads are said to be middle-sized; and the rays white, not changing to violet, as in A. versicolor, under which name it is cultivated in some gardens, according to Nees. Achenia glabrous.

99. *A. strictus* (Poir.): stem glabrous, strict, racemose-decompound; the branches strict, coarctate; leaves lanceolate, attenuate, partly clasping, somewhat serrate in the middle, scabrous towards the margins; involucre closely imbricated. *Nees.—Poir. suppl.* 1. *p.* 498; *Nees, Ast. p.* 124; *DC. prodr. p.* 245. (excl. β.)

North America.—"Resembles A. præaltus; from which it differs by its shorter branches; the leaves more (appressed-) scabrous towards the margins; the larger heads; the closely imbricated involucre, which is scarcely subsquarrose even in the terminal head; the narrow, elongated and somewhat distant lilac-colored rays, which in that species are paler, a little shorter, and approximate." *Nees.* This author however does not place it in the section which includes A. præaltus, but with his Concinni, between A. Chilensis and A. mutabilis. We have seen no specimens. The A. strictus β., *Lindl. in Hook. fl. Bor.-Am.* appears not sufficiently different from the A. laxifolius of the same work.

100. *A. onustus* (Nees): stem racemose-compound, decurved; the branches lax, racemose at the summit; leaves tapering to each end, partly clasping, appressed-serrate in the middle, the margins scabrous; heads somewhat secund, on short pedicels; scales of the short involucre imbricated, lanceolate, scarcely equalling the disk. *Nees, Ast. p.* 122; *DC. prodr.* 5. *p.* 245. A. confertus, *Desf. cat. hort. Par. ed.* 3. *p.* 401, not of *Nees*, fide *DC.*

β. *squarrosus* (Lindl.): leaves of the branchlets linear, squarrose. (Cultivated in the English gardens under the name of A. Tradescanti cæruleus.) *Lindl. in DC. l. c.*

North America? but the origin very doubtful.—Nees compares it with his A. amplexicaulis, A. mutabilis, and A. lævigatus (all of which are probably included under our A. lævis); but states the heads to be more like those of A. luxurians. The stem is said to be 3 or 4 feet high, the summit decurved by the weight of the flowers, glabrous, or with a few scattered small bristles, or slightly hirsute in lines at the summit; the leaves smooth and lucid. Heads crowded, nodding, with copious pale blue rays; the scales of the turbinate involucre not densely imbricated, lanceolate, with a membranaceous margin, ciliate. Achenia glabrous. *Nees.*

101. *A. purpuratus* (Nees): stem somewhat simply racemose-virgate; the branches elongated and bearing single heads; leaves narrowly lanceolate, clasping, with scabrous margins, sharply serrate in the middle; the uppermost ovate-lanceolate; those of the branches numerous, lanceolate, spreading, entire, equal and equally distant; scales of the turbinate involucre imbricated, lanceolate, with colored tips. *Nees, Ast. p.* 118; *DC. prodr.* 5. *p.* 244. A. miser, *Lam. dict.* 1. *p.* 308 (excl. syn.), fide *DC.*

North America? Cultivated for many years at the Garden of Plants, Paris, under the name of A. miser.—Scales of the involucre imbricated in several series, not rigid, lanceolate-triangular, whitish at the base, with purplish tips, all similar; the inner nearly the length of the disk; the outermost about half that length. Rays short, erect-spreading, purple; the disk turning purple. Achenia linear-cuneiform, glabrous.—Placed by Nees at the commencement of his Concinni: Dr. Lindley compares with it his A. azureus, and A. turbinellus. We have seen no specimens.

102. *A. retroflexus* (Lindl.): stem compound-racemose; the branches short and bearing single heads; leaves linear-lanceolate, entire, very glabrous; those of the branches linear-subulate, recurved, distant; scales of the hemispherical involucre linear-lanceolate, squarrose. *Lindl.! in DC. prodr.* 5. *p.* 244.

North America.—Disk whitish, scarcely changing. Rays blue. *DC.*—We are uncertain whether this is described from cultivated or indigenous specimens. No farther particulars are given. It is placed between A. azureus and A. turbinellus.

A. serotinus, Mill. *dict. ed. Martyn*, (1797,) founded on the A. foliis oblongis acutis basi latioribus semi-amplexicaulibus, caule ramoso, floribus terminalibus plerumque solitariis (Late blue shrubby Starwort of John Tradescant, commonly called *Michaelmas Daisy*), of the earlier editions, is anterior to the A. serotinus of Willdenow, but is not cited by that author or by succeeding writers. It is said to have been brought from Virginia, and to bear "pretty large flowers, which are of a very pale bluish color, tending to white."

§ 4. *Scales of the involucre nearly equal, loose, narrow, scarcely or slightly imbricated, more or less herbaceous: receptacle naked, scrobiculate: appendages of the style triangular, short: pappus of capillary bristles: rays numerous: stems often low and simple, bearing solitary or few large heads.* —ORITROPHIUM, Kunth, *excl. spec.?* (Ast. Alpigeni, *Nees*, *DC.*)

103. *A. alpinus* (Linn.): pubescent or hairy; stem bearing a single head; leaves entire, 3-nerved or tripli-nerved, obtuse; the radical ones spatulate, the cauline lanceolate; scales of the involucre loose, about the length of the disk, oblong-linear, obtuse or obtusish, ciliate and pubescent.—*Linn. spec.* 2. *p.* 872; *Jacq. fl. Austr. t.* 88; *Bot. mag. t.* 199; *Nees, Ast. p.* 26; *Hook.! fl. Bor.-Am.* 2. *p.* 6; *DC.! prodr.* 5. *p.* 227.

On the higher Rocky Mountains, in lat. 54°, *Drummond!*—Heads, with the blue rays, 1½–2 inches in diameter, showy. Radical leaves petioled.—The American plant resembles Siberian forms.

104. *A. pygmæus* (Lindl.): villous; stem bearing a single head; leaves at length nearly glabrous, obtuse, entire, 1-nerved or obscurely 3-nerved; the radical ones spatulate-oblong or oblanceolate; the cauline lanceolate; scales of the very villous involucre linear, obtuse, squarrose-spreading.—*Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 6, & *in DC. prodr.* 5. *p.* 228.

Arctic sea-coast, *Richardson!*—Plant about 2 inches high. Head large for the size of the plant; the rays scarcely twice the length of the involucre. —Smaller specimens of A. intermedius, *Turcz.!* (A. Argunensis, fide *DC.*) scarcely differ from this species, except in their longer rays and more hirsute pubescence.

105. *A. Andinus* (Nutt.): rhizoma slender and creeping; stems several, decumbent, above pubescent, mostly bearing a single head; leaves glabrous, entire; the radical spatulate or somewhat lanceolate; the cauline nearly linear, acute, usually wider at the base and clasping; scales of the involucre linear, nearly glabrous, ciliate, mostly acute; rays numerous, rather long; achenia nearly glabrous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 290.

Rocky Mountains at Thornberg's Ridge, near the line of perpetual snow in lat. 42°, about 10,000 feet above the level of the sea, *Nuttall!*—Root wiry and slender, sending up small clusters of decumbent stems, 3–4 inches high. Leaves scarcely an inch long, rather coriaceous. Head about half as large as in A. alpinus.

106. *A. glacialis* (Nutt.): rhizoma thickish, not creeping; stem low, erect, minutely pubescent above, often nearly leafless, bearing a single head; leaves spatulate-oblong and lanceolate, entire, glabrous, obscurely 3-nerved; the cauline small, acute, partly clasping; scales of the involucre numerous, linear-subulate, glandular-puberulent, appressed, about the length of the disk. —*Nutt.! l. c. p.* 291.

Rocky Mountains, with the preceding. *Nuttall!*—Stems about 3 inches high, bearing 2–3 small leaves, and a head about the size of the preceding, but with broader and shorter rays. Radical leaves 1–2 inches long, thickish, with somewhat scabrous margins. Pappus strongly scabrous. Involucre much like that of A. salsuginosus, brownish, somewhat viscid.

107. *A. salsuginosus* (Richards.): stem simple, leafy, bearing 1 to 3 heads, pubescent above with appressed hairs; leaves linear-obovate and lanceolate, apiculate-acuminate, mostly entire, veiny, somewhat pubescent; the radical and lower cauline tapering into a margined petiole, the upper sessile and partly clasping; scales of the involucre narrowly linear or linear-subulate, pubescent, nearly equal, lax, with mostly squarrose-spreading or recurved tips; achenia somewhat hairy.—*Richards. in appx. Frankl. journ. p.* 749, *& ed.* 2. *p.* 32; *Spreng. syst.* 3. *p.* 527; *Nees, Ast. p.* 29; *Hook. & Arn. bot. Beechey, p.* 126; *DC. prodr.* 5. *p.* 229. A. salsuginosus, *β. Hook.! fl. Bor.-Am.* 2. *p.* 6. A. Unalaschkensis, *Less. in Linnæa*, 6. *p.* 124; *Nees, Ast. p.* 34; *Bongard! veg. Sitcha, l. c. p.* 148; *DC.! prodr.* 5. *p.* 228.

β. stem stouter and larger, often bearing 3–5 heads; lower and radical leaves broadly spatulate or obovate; the upper oblong-ovate or ovate-lanceolate; scales of the involucre somewhat glandular.—A. salsuginosus (*a.*) *Hook.! bot. mag. t.* 2942, *& fl. Bor.-Am.* 2. *p.* 6; *Hook. & Arn. bot. Beechey, suppl. p.* 350.

Subarctic America, from the salt plains of the Athabasca, *Richardson!* and the Rocky Mountains, *Drummond!* to Kotzebue's Sound! the N. W. Coast! Unalaschka! Sitcha, and the interior of California (Oregon?), *Douglas!*—Plant 6 to 18 inches high, with a thickish rhizoma, and large heads (the peduncles thickened at the summit); the rays 30 or more, 6 to 8, or even 10 lines long, purple? Radical and lower leaves 3–5 inches long, including the margined petiole, varying from 3 lines to an inch in width, nearly glabrous when old. Pappus densely scabrous.—In all the specimens we have examined, the scales of the involucre are in fact nearly the length of the disk, although their recurved summits cause them to appear much shorter. In the A. Unalaschkensis, the involucre is more pubescent or hairy, and scarcely glandular or viscid, and less recurved. The specimens from the North West Coast, collected by Mr. Menzies, are intermediate in this respect.

108. *A. peregrinus* (Pursh): stem somewhat simple, erect, glabrous, hirsute above, bearing 1–3 heads at the summit; leaves sessile, remote, oblong-lanceolate, gradually acute, glabrous; scales of the involucre lanceolate-linear, very acute, villous, loose, as long as the disk; rays numerous (heads large, violet). *Pursh, fl.* 2. *p.* 556; *DC. prodr.* 5. *p.* 228. "A. Tilesii, *Wikstr. in act. Holm.* 1822. *p.* 13," fide *Nees & DC.*

North West Coast; Unalaschka, *D. Nelson, Pursh.* (Norfolk Sound, *Eschscholtz!*)—We copy the character from Pursh, since Chamisso's plant from Unalaschka, which Lessing has described under this name, De Candolle inclines to refer to A. foliaceus, *Lindl.*; the description of Nees is drawn from Chamisso's plant; while that of Bongard from Sitcha is supposed to be the same. We have a fragment collected by Eschscholtz which accords with Pursh's character.

109. *A. foliaceus* (Lindl.): stem simple? racemose; leaves oblong-lanceolate, clasping, somewhat serrate, glabrous; heads terminating the axillary branchlets; scales of the involucre spreading, foliaceous, glabrous. *Lindl. in DC. prodr.* 5. *p.* 228. A. peregrinus, *Less. in Linnæa, l. c.?* ex *DC.*

Unalaschka, *Fischer.*—Species remarkable for the scales of the involucre, which resemble the rameal leaves: peduncle tomentose. *DC.*—De Candolle also remarks that in his own specimen, likewise received from Fischer, the scales of the involucre are erect instead of spreading, ciliate instead of entirely glabrous; the leaves obtuse at the base; the stems slightly hairy, with the hairs here and there somewhat in lines.

110. *A. graminifolius* (Pursh): slightly pubescent with minute scattered hairs; leaves very numerous, narrowly linear; stems slender, branched at the summit; the branches somewhat corymbose, simple, prolonged into slender naked peduncles terminated by single (small) heads; scales of the involucre linear-subulate, loose, scarcely in a double series, nearly the length of the disk; achenia minutely hairy.—*Pursh, fl.* 2. *p.* 545; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 32; *Lindl.! in DC. prodr.* 5. *p.* 227. Galatella graminifolia, *Hook.! fl. Bor.-Am.* 2. *p.* 15. Erigeron hyssopifolium, *Michx.! fl.* 2. *p.* 123.

Hudson's Bay, *Michaux! & Herb. Banks*, to Slave Lake, *Richardson!*—Stem 6–12 inches high, clothed like the leaves with minute and often sparse somewhat strigose hairs; the simple branches leafy like the stem below; the upper portion, or peduncle, leafless or nearly so, 2–3 inches long. Leaves an inch or more in length, acute or mucronulate, with a conspicuous midrib, and the broader ones presenting lateral veinlets or ramified nerves. Heads about a third of an inch in diameter; the involucre resembling an Erigeron. Rays 15–25, fertile, purple or rose-color, much longer than the disk. Appendages of the style very short, triangular. Achenia narrow, compressed, scabrous-hirsute under a lens.—This plant bears no small resemblance to Aster roseus, *Stev.* (Calimeris rosea, *DC.*); which, however, has larger heads, broader and more unequal and imbricated scales of the involucre, silky-villous achenia, &c.

§ 5. *Scales of the regularly imbricated involucre with membranaceous or scarious margins, destitute of herbaceous tips or appendages, often carinate, mostly unequal: appendages of the style lanceolate, sometimes oblong or triangular: receptacle alveolate (flat): bristles of the pappus capillary, usually unequal.*—ORTHOMERIS. (Calimeris, *Nees, Lindl., DC.*, in part; not of *Cass.* Species of Heleastrum, *DC.* Eucephalus, Xylorhiza, & Galatella § Calianthus, *Nutt.*)

The original Calimeris (Kalimeris platycephala, *Cass.*, or C. incisa, *DC.*) is distinguished by its *conical receptacle*, which is obscurely alveolate, its *broad and flat margined achenia*, and a *pappus of short setaceous-subulate* bristles, none of which exceed in length the proper tube of the (disk) corolla. C. integrifolia, *Turcz.!* presents the same characters; but, having narrow entire leaves, it accords in habit with C. Altaica and C. canescens, *Nees*, C. Tartarica, C. exilis, &c. of Lindley, and C. rosea, *DC.* But all the latter have a flat, or at most slightly convex, receptacle, narrower achenia without distinct margins, and a capillary pappus which is never much shorter than the corolla. These, in connexion with the Xylorhiza and a part of Eucephalus of Nuttall, the Aster nemoralis, *Ait.*, &c. appear to form a pretty well defined subgenus, or genus, more nearly allied to Galatella (as that genus now stands) than to Calimeris, but hardly to be separated from Aster by those who would retain Tripolium as a subgenus; and A. acuminatus, *Michx.*, with

A. Tartaricus (*Linn. f.*), *DC.* will perhaps form a mere section of the same group. We are acquainted with only two species of Calimeris (thus retricted), viz. C. incisa and C. integrifolia: the genus should be placed next to Boltonia.—In Sir Wm. Hooker's herbarium, two plants (collected at Simla by Lady Dalhousie), very similar in habit and foliage, are labelled 'Calimeris flexuosa' by Dr. Lindley, neither of which altogether accords with the character given by De Candolle. Both have a broad and perfectly flat receptacle, and a loose involucre of two series of scales; the exterior larger, unequal, and more or less foliaceous. One of them has a double pappus; the inner capillary and as long as the corolla, the outer setaceous and shorter than the achenia; it therefore belongs to De Candolle's Diplopappus § Calimeridei (certainly not a congener of D. linariifolius, &c.), and is probably C. asperulus, *DC.* The other presents a simple setaceous-subulate pappus, shorter than the achenia and not exceeding the proper tube of the corolla, nearly similar to the exterior pappus of the preceding plant, which it nearly resembles. The two should doubtless be united in the same (new?) genus; to which, we may remark, the Aster peduncularis, *Wall.! cat. no.* 2967 (Amphiraphis peduncularis, *DC. prodr.*) also belongs. The pappus of the latter is manifestly double, and the rays doubtless not yellow.

* *Scales of the hemispherical involucre unequal, narrowly lanceolate or linear, loosely imbricated in* 2 *or* 3 *series: alveoli of the receptacle toothed and lacerate: appendages of the style lanceolate: achenia glandular (or hairy): heads loosely corymbose: leaves ample, cuneiform-lanceolate, coarsely toothed towards the summit, pinnately veined.*

This section might include Aster Tartaricus, *Linn. f.*, *DC.*; which has more obtuse appendages to the style, and broader hairy achenia.

111. *A. acuminatus* (Michx.): stem simple, flexuous, pubescent or hairy, paniculate-corymbose at the summit; the peduncles slender; leaves oblong-lanceolate or cuneiform-lanceolate, conspicuously acuminate, coarsely or incisely toothed above, the narrowed base, entire, glabrous above, the margins finely ciliate; scales of the involucre lax, membranaceous, acuminate; achenia narrowly oblong, glandular.—*Michx.! fl.* 2. *p.* 109; *Pursh! fl.* 2. *p.* 555; *Bigel.! fl. Bost. ed.* 2. *p.* 312; *Hook.! bot. mag. t.* 2707, *& fl. Bor.-Am.* 2. *p.* 9; not of *Nees.* A. diffusus *var.* acuminatus, *Pers. syn.* 2. *p.* 447. Diplostephium acuminatum, *DC.! prodr.* 5. *p.* 273.

In deep rich woods, Canada! to the mountains of Virginia; not uncommon in the New England States! and New York. Aug.–Oct.—Rhizoma slender, creeping. Stem 1–2 feet high, bearing rather numerous heads in a loose paniculate corymb; or frequently flowering when only 6 inches high, and bearing very few heads; the slender peduncles and pedicels pubescent, slightly viscid, leafless, or with a few subulate bracts. Cauline leaves 3–6 inches long, membranaceous, pubescent or hairy on the veins, at length nearly glabrous. Heads from one-third to half an inch in diameter. Scales of the involucre nearly glabrous, membranaceous throughout, often purple, the innermost linear, very acute, about the length of the disk; the exterior successively shorter. Rays 12–18, elongated, white, often tinged with purple. Appendages of the anthers subulate-lanceolate. Appendages of the style subulate-lanceolate. Bristles of the pappus capillary, unequal in length, but otherwise similar.—There is no proper exterior pappus, as in Diplopappus, &c.; nor are the bristles more unequal than in many genuine Asters.

* * *Scales of the turbinate-hemispherical involucre narrowly linear-lanceolate, rather closely imbricated in about* 3 *series; the innermost scarcely as long as the disk; the exterior shorter, loose, passing into subulate bracts: alveoli of the receptacle short, denticulate: branches of the style broadly linear, terminated with a short acutish appendage: achenia obovoid-turbinate, turgid,* 6–8-*ribbed, glandular: pappus copious, obscurely scabrous: leaves crowded, lanceolate, mostly entire; the lower surface somewhat pinnately veined, minutely dotted with resinous globules: heads terminating the simple pedunculiform branches.* (Galatella § Calianthus, *Nutt.*)

112. *A. nemoralis* (Ait.): scabrous-puberulent; stem very leafy, slender, simple or corymbose at the summit; leaves somewhat rigid, lanceolate or linear, sessile, spreading, scabrous above, the revolute margins sometimes obscurely 2–4 toothed; those of the slender simple branches or peduncles subulate; rays large.—*Ait. Kew.* (*ed.* 1) 3. *p.* 198; *Willd. spec.* 3. *p.* 2021; *Nutt.! gen.* 2. *p.* 154. A. uniflorus, *Michx.! fl.* 2. *p.* 110 (stem simple). A. ledifolius, *Pursh! fl.* 2. *p.* 544. A. Greenei, *Nees! mss. in herb. Arn. & Hook.* Galatella nemoralis, *Nees, Ast. p.* 173; *Hook.! fl. Bor.-Am.* 2. *p.* 15; *DC.! prodr.* 5. *p.* 257; *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 303.

Bogs and wet places, Newfoundland, *Pylaie! Dr. Morrison! Mr. Cormack!* Nova Scotia (ex *Ait.*) and Canada (from Lake Mistassins, *Michaux!*) to Boston, *Dr. B. D. Greene!* and swamps in the pine barrens of New Jersey! Aug.–Oct.—Stem 1–2 feet high, fragile, sometimes simple and bearing a solitary head, usually with several simple and often flexuous nearly naked branches, each terminated by a head, rarely branching above. Leaves pale green, 10 to 20 lines long and 2 to 4 wide, usually acutish at each end, and tipped with a callous gland-like point; the upper surface nearly veinless; the lower with a prominent midrib and several rather strong primary veins, sprinkled (under a lens) with very numerous and minute resinous globules. Heads rather large, showy; the peduncle thickened at the base of the involucre, giving the latter a somewhat turbinate appearance. Scales of the involucre minutely pubescent, acute; the inner appressed, often purplish. Rays rather broadly linear, 8–10 lines long, pale lilac-purple, elongated; the disk-flowers pale yellow, slightly longer than the pappus. Branches of the style in the rays stigmatose throughout their whole length; the achenia of the ray-flowers fertile in all the specimens we have examined.

* * * *Scales of the broadly hemispherical involucre loosely imbricated in about 2 series, oblong or ovate-lanceolate, acuminate, carinate below, herbaceous, with scarious margins; the inner about the length of the disk, the exterior rather shorter: "receptacle flat, alveolate"* (Nutt.): *appendages of the style lanceolate, acute: achenia oblong, compressed, densely silky: pappus of copious rather rigid unequal bristles, about the length of the corolla of the disk: root or caudex woody, bearing numerous dwarf mostly simple stems, terminating in a naked peduncle: heads large, solitary: leaves thickish, entire, somewhat 3-nerved, mucronulate; the lower linear-spatulate; the uppermost linear-lanceolate.* (Xylorhiza, *Nutt.*)

We find no important character to distinguish the Xylorhiza of Nuttall from the group to which Calimeris Altaica, *Nees*, C. Tartarica, *Lindl.* &c. belong; except that the appendages of the style are narrower.

113. *A. Xylorhiza:* leaves and scales of the involucre canescently somewhat villous or tomentose, tipped with a rigid mucronate point; peduncle elongated.—Xylorhiza villosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 298.

Arid argillaceous tracts in the Rocky Mountains, and on rocks towards the sources of the Platte, *Nuttall!*—Root long, fusiform, perpendicular: stems 4–6 inches high, minutely pubescent. Leaves 1–2 inches long, spatulate or linear-spatulate, 2–3 lines wide towards the apex, tapering to the base. Peduncle usually solitary, 1–3 inches long. Involucre about half an inch in diameter; the scales ovate-lanceolate, with a very stout keel or midnerve, and broad scarious margins (especially the innermost), tapering into a cuspidate point. Rays 15 or more, large, much longer than the disk, "pale red." (*Nutt.*) Pappus brownish, somewhat strongly scabrous.—The (tomentose rather than villous) pubescence appears as if deciduous, in which case it will probably be difficult to distinguish this species from the following.

114. *A. glabriusculus:* lower leaves pubescent; the upper nearly glabrous, linear-lanceolate, acute; peduncles solitary or 3–5 together, short.—Xylorhiza glabriuscula, *Nutt.! l. c. p.* 297.

With the preceding, *Nuttall!*—The lower leaves (about 2 inches long, linear-spatulate, are sparsely clothed with a similar pubescence as the preceding; and the scales of the involucre are nearly glabrous, with more membranaceous points: the scarious margins are somewhat denticulate-ciliate in both. The rays are said to be pale rose-color.

* * * * *Scales of the turbinate-campanulate involucre regularly imbricated in* 3 *to* 4 *series, ovate, concave, somewhat carinate (acute or obtuse); the innermost about the length of the disk; the exterior successively shorter, but similar: alveoli of the receptacle lacerate: appendages of the style lanceolate, acute: achenia oblong, compressed, villous: pappus copious, rather longer than the corolla; the bristles unequal, a few of the longest often obscurely thickened towards the summit: stems several from a woody root, simple, very leafy: leaves lanceolate, entire, somewhat rigid: heads (rather small) in contracted corymbs.* (Eucephalus, *Nutt.*, excl. spec. no. 2 & 4.)

Mr. Nuttall's first species, Eucephalus elegans, is much more allied to the third, E. (§ Lagatea) glaucus, than to his E. albus. The fourth, E. ericoides, is a Diplopappus. The two plants here retained, if we except their fertile rays and narrow appendages to the style, accord in habit and character with such impunctate species of Galatella as G. Hauptii and G. leptophylla; both of which, it may be remarked, but especially the former, have the innermost series of the pappus much more evidently clavate than E. elegans, *Nutt.*

115. *A. elegans:* stems minutely puberulent; leaves narrowly lanceolate, closely sessile, pale, minutely scabrous, especially the margins, somewhat 3-nerved; heads in a contracted corymb; scales of the obovate-turbinate involucre ovate, acute, pubescent, with ciliate-fringed margins; rays few (6 or 7, *Nutt.* to 10).—Eucephalus elegans, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 298.

Plains of the Oregon, and in the Blue Mountains, *Nuttall!* Sept.–Oct.—Stems 2–3 feet high, clothed with numerous erect leaves, which are 1 to 2 inches long and 4 to 6 lines wide, gradually becoming smaller towards the summit of the stem, with scabrous margins; the surfaces also minutely scabrous with close hairs and obscure dots. Scales of the involucre rigid, pale, tinged with purple; the narrow scarious margins densely laciniate-fringed under a lens; the inner rather shorter than the disk. "Rays pale purple," (*Nutt.*); the disk-flowers 15–20. Appendages of the anthers narrowly lanceolate. Bristles of the pappus unequal; the inner series very obscurely thickened towards the apex.

116. *A. glaucus:* very smooth, pale and somewhat glaucous; stem often branching above; leaves oblong-linear, closely sessile, 1-nerved, reticulate-veined; heads in contracted corymbs, or somewhat racemose; scales of the campanulate involucre oval, obtuse, glabrous, slightly ciliate; the innermost lanceolate, membranaceous, acute, as long as the disk; "rays about 14," *Nutt.*—Eucephalus (§ Lagatea) glaucus, *Nutt.! l. c. p.* 299.

Rocky Mountains, about lat. 42°, and towards the sources of the Platte, *Nuttall!*—Stem 12 to 18 inches high. Leaves 2 to 3 inches long, and 4 to 6 lines wide, somewhat coriaceous, both sides of a similar pale hue; the margins scarcely scabrous; the lowest narrowed at the base. Heads rather smaller, and the scales of the involucre fewer than in the preceding, pale. Ovaries minutely pubescent. Bristles of the pappus not at all thickened at the apex.—Manifestly allied to the preceding: our specimens are immature, with the rays undeveloped.

* * * * * *Scales of the somewhat hemispherical involucre closely imbricated in 3–4 unequal series, shorter than the disk, oblong, obtuse; the exterior somewhat carinate, passing into subulate bracts; the interior with broad membranaceous margins: alveoli of the receptacle entire: appendages of the style lanceolate: achenia oblong, very glabrous: pappus copious, as long as the corolla, unequal; the longer bristles clavellate-thickened at the apex: stems simple: leaves linear-lanceolate, rigid, scabrous: heads (rather small) corymbose.* (Species of Heleastrum, *DC.*)

117. *A. ptarmicoides:* stems several from a somewhat woody rhizoma, scabrous above; leaves linear-lanceolate, acute, somewhat shining, smooth or scabrous, with very scabrous margins, entire; the lower elongated, often slightly and remotely toothed, tapering to the base or somewhat petioled; corymb fastigiate, simple or compound; scales of the involucre rather obtuse; rays 12–18, linear-oblong, short.—Chrysopsis alba, *Nutt.! gen.* 2. *p.* 152. Dœllingeria ptarmicoides, *Nees, Ast. p.* 183. Diplopappus albus, *Hook.! fl. Bor.-Am.* 2. *p.* 21; *Gray! in ann. lyc. New York*, 3. *p.* 226. D. ptarmicoides, *Lindl.! in herb. Torr., &c.* Heleastrum album, *DC. prodr.* 5. *p.* 264, excl. syn. Aster albus, *Willd.?* Eucephalus albus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 299.

β. heads few or solitary. (*Lindl.! in DC. l. c.*)

γ. leaves nearly all furnished with 3 or 4 sharp spreading teeth on each side; stem very scabrous above; inner scales of the involucre rather broader.—Heleastrum album γ. *DC. l. c.* (*Lindl.!*)

Dry soil, or rocky banks of streams, from the Missouri, near Fort Mandan! to Saskatchawan! Lake Superior! Wisconsin! Michigan! Upper Canada along the Great Lakes! to the banks of Black River, Jefferson County, New York! and Pownal, Vermont, *Mr. Robbins!*—July–Sept.—Stems 6–18 inches high, rigid, leafy, scabrous, especially above, with a minute somewhat strigose pubescence. Leaves rigid, with serrulate-scabrous margins, or often sparsely ciliate towards the base, with a strong midrib and two more or less distinct lateral nerves, anastomozing towards the summit; the radical and lowermost 3 to 6 inches long, 3–4 lines wide, linear-lanceolate, or oblanceolate, tapering gradually into a more or less distinct petiole; the upper successively shorter and less narrowed at the base; those of the branches scattered, linear-subulate. Corymb spreading. Involucre nearly glabrous, greenish; the outermost scales somewhat lanceolate-subulate; the inner more membranaceous, narrowly oblong, slightly ciliate, shorter than the disk. Rays pure white. Pappus soft, white.—It is not probable that this is the Aster albus, *Willd. herb. & Spreng.*, a species of unknown origin, which is said to have oblong-lanceolate, rather obtuse and nerveless leaves, leafy branches, and elongated rays.—This plant has little agreement with De Candolle's Heleastrum paludosum, besides the clavellate pappus; a character which equally exists in some other divisions of Aster, in a few species of Galatella, &c.

118. *A. lutescens:* pubescent-scabrous throughout; leaves lanceolate, acute, scarcely nerved; the lower elongated and tapering into a petiole, somewhat serrulate; the upper short, oblong-linear; corymb simple or rather compound; scales of the involucre oval or oblong, very obtuse, minutely pubescent; rays ochroleucous?—Diplopappus lutescens, *Lindl.! in DC. prodr.* 5. *p.* 278. D. albus β. lutescens, *Hook.! fl. Bor.-Am.* 2. *p.* 21.

Saskatchawan, on dry elevated grounds of the Assiniboin River, *Douglas!*—Plant with the habit of the preceding (a foot high), everywhere covered with a similar, but denser, rough pubescence. Lower leaves 5–6 inches long, 5 lines wide; both surfaces scabrous-pubescent, and not shining: the upper cauline an inch or less in length, and broader in proportion. The involucre is as long as the disk (but the flowers are not fully developed, so that this character may not be relied upon), and the scales are broader than in the preceding. Mr. Douglas has labelled his specimens, "flower yellow", but the rays appear to have been at most only ochroleucous. If this be the case, it is doubtless a distinct species; if not, it may prove to be only a variety of the preceding, as Hooker supposes.

§ 6. *Scales of the involucre imbricated in few–several series, membranaceous or chartaceous with scarious margins, destitute of herbaceous tips, usually very acute; the exterior shorter and passing into scale-like bracts: receptacle somewhat alveolate: rays numerous (rarely even in a double series): appendages of the style subulate from a broad base, or triangular, acute: bristles of the pappus soft and capillary, nearly equal: achenia compressed, often striate: annual or perennial, mostly glabrous, and natives of salt marshes: leaves thickish or succulent, narrow, usually entire.*—OXYTRIPOLIUM, DC., under Tripolium. (Tripolium ('or perhaps sect. of Aster,') § Astropolium, *Nutt.*)

* *Scales of the involucre regularly and closely imbricated in numerous series: rays exserted, in a single series (heads large): perennial.*

119. *A. Chapmanii:* very glabrous; stems simple or branched at the base, long and slender, strict, somewhat corymbose at the summit; the filiform branches terminated by single (large) heads; leaves numerous, linear-subulate, appressed, those of the branches reduced to subulate bracts; scales of the broadly obconical involucre closely and regularly imbricated in 5 or 6 series, slightly pubescent, ovate-oblong, acute or acuminate, the exterior successively shorter; rays elongated; achenia oblong, compressed, very glabrous.

In swamps, Middle Florida, *Dr. A. W. Chapman!*—Stems 2 feet or more in height, virgate, not in the least flexuous, striate with lines produced from the midrib of the leaves. Lower leaves 3–4 inches long; the cauline about a line wide at the appressed base, tapering to the subulate apex, successively reduced upwards to half an inch or less in length, rather rigid, but not fleshy, smooth on the margins; the uppermost sometimes ciliate. Heads as large as in A. flexuosus; the scales of the involucre broader (the exterior triangular-ovate), brownish, with a very narrow but distinct and abrupt scarious margin. Rays 20 or more, large (three-fourths of an inch long), apparently bluish-purple. Corolla of the disk sparsely pubescent below with minute jointed hairs. Appendages of the style ovate-triangular, acute, flat, as long as the oblong stigmatic portion. Pappus capillary, nearly in a single series, as long as the corolla of the disk. Alveoli of the receptacle toothed.—A very remarkable species.

120. *A. flexuosus* (Nutt.): very smooth and glabrous; stem flexuous, dichotomous; the branches mostly terminated by (large) solitary heads; leaves linear-subulate, thick and fleshy; the lower linear-lanceolate, acute, tapering to the base; those of the branchlets reduced to subulate-acuminate scale-like bracts; scales of the obovate involucre lanceolate or ovate-lanceolate, subulate-acuminate, unequal, imbricated in several series; rays numerous, rather short; achenia slender, sparsely pubescent, strongly 5-striate.—*Nutt.! gen.* 2. *p.* 154; *Ell.! sk.* 2. *p.* 343. A. sparsiflorus, *Pursh! fl.* 2. *p.* 547, not of *Michx.* A. Tripolium? *Walt. Car. p.* 154. Tripolium flore unico caulem terminante, &c. *Clayt.! fl. Virg. ed.* 1. *p.* 99. T. flexuosum, *Nees, Ast. p.* 155; *DC.! prodr.* 5. *p.* 254.

Salt marshes, Massachusetts! and Connecticut! to Georgia! and Florida!

Sept.–Oct.—Stem erect or ascending, 6–20 inches high; the whole plant very smooth, with a somewhat glaucous hue. Leaves succulent, 3–6 inches long; those of the branches reduced to ovate-subulate acuminate bracts, passing into the chartaceous regularly imbricated scales of the involucre. Heads few, about half an inch in diameter. Rays about 20, pale purple, oblong-linear, moderately exserted. Achenia oblong-linear.

* * *Scales of the involucre in 2–3 series: rays more or less distinctly in a double series, very short; the ligules scarcely exceeding the pappus, or sometimes wanting: annual.* (Conyzopsis.)

121. *A. angustus:* stem strict; the branches erect, racemose; leaves linear, acute, ciliate-serrulate; scales of the hemispherical involucre linear, acute, in about 2 series, somewhat equal; ligules extremely short, or wanting; achenia densely and minutely hirsute-pubescent.—Tripolium angustum, *Lindl.! in Hook. fl. Bor.-Am.* 2. *p.* 15, *& in DC. prodr.* 5. *p.* 254.

Saskatchawan, and towards the Rocky Mountains, *Drummond!* Slave Lake, *Richardson!*—Plant a foot or more in height, with numerous strict branches, glabrous or nearly so, except the serrulate-ciliate or ciliate-scabrous margins of the slender leaves. Heads as large as in the following, racemose (either few or numerous) on the branches. Exterior scales of the involucre nearly or entirely destitute of membranaceous margins. Ray-flowers in two series; the corolla shorter than the capillary pappus, with an extremely short ligule (shorter than the style), or frequently reduced to a slender truncate tube (as in Conyza, &c.), which is often much shorter than the style. Corolla of the disk also slender.

122. *A. linifolius* (Linn.): very smooth and glabrous; stem erect, racemosely branched or compound; the branches erect-spreading, bearing numerous racemose or paniculate heads; leaves linear or narrowly lanceolate, attenuate-acute or acuminate, entire; the lowermost tapering into a petiole; those of the branches subulate; scales of the cylindraceous involucre linear-subulate, unequal, in about 3 series; ray-flowers somewhat in two series; the ligules scarcely exceeding the pappus; achenia narrow, minutely pubescent. —*Linn.! hort. Cliff. p.* 408, *& spec.* 2. *p.* 874 (excl. syn. *Gronov.*); not of *Ait.*, *Willd.*, *&c.* A. subulatus, *Michx.! fl.* 2. *p.* 111 (partly); *Nutt.! gen.* 2. *p.* 154; *Ell.! sk.* 2. *p.* 345; *Bigel.! fl. Bost. ed.* 2. *p.* 309. A. longifolius, *Desf. cat.? Poir. suppl.* 1. *p.* 480? Tripolium subulatum, *Nees, Ast. p.* 156 (in part); *DC. prodr.* 5. *p.* 254, partly.

Salt marshes, Massachusetts! to South Carolina! Sept.–Oct.—Stem 1–3 feet high, stout, erect, usually much branched, with numerous paniculate or corymbose-paniculate heads, which are 4 to 5 lines in length. Leaves rather fleshy; the lower 4 to 6 inches long, 3 to 4 lines broad, narrowed below, partly clasping, obscurely veined. Scales of the involucre very acute, the inner fully as long as the disk. Ray-flowers about 30, with very short purplish-white ligules, often shorter than the capillary pappus; the disk-flowers fewer. Pappus in a single series. Receptacle almost naked. Involucre reflexed after the fruit is mature.—The A. subulatus of Michaux, as well as the Tripolium subulatum of subsequent authors, doubtless includes both this and the following species; but Michaux's character is at least partly derived from the present species, which moreover is alone found so far north as Pennsylvania. But if we may rely upon our memoranda respecting the specimens in the herbarium of the Hortus Cliffortianus, and upon their authenticity, the plant here described is the original A. linifolius (the A. foliis linearibus acutis, caule corymbose ramosissimo, *Linn. hort. Cliff. p.* 408); a name to which we may revert without increasing the confusion, since the A. linifolius of subsequent authors is a Galatella, and probably only a variety of G. hyssopifolia. If this view should prove incorrect, the name of A. subulatus, *Michx.* ought perhaps to be retained for this species rather than the following, to which, however, it is more appropriate. There is no specimen under the name of A. linifolius in the Linnæan herbarium; and the plant which, in the *Species Plantarum*, is cited from Gronovius (the Tripolium flore unico caulem terminante, cujus radii purpurei et longi, &c., *Clayt.*) is A. flexuosus, *Nutt.*

* * * *Scales of the involucre in 2–3 series: rays exserted, in a single series.*

123. *A. divaricatus* (Nutt. under Tripolium, *not of* Linn.): annual, very glabrous; stem erect or ascending, diffusely much branched, the branches and branchlets slender; leaves linear-subulate, very acute, with smooth or minutely denticulate-scabrous margins; the lowermost narrowly linear, tapering to the base; those of the branches subulate, very small; heads (small) scattered, loosely paniculate; scales of the turbinate-cylindraceous involucre linear-subulate, very acute, membranaceous, unequal, imbricated in about 3 series; rays numerous in a single series, longer than the disk; achenia scabrous-puberulent.—Tripolium (Astropolium) divaricatum, *Nutt.! in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 296. T. subulatum, *Nees, Ast. p.* 156 (partly); *DC.! prodr.* 5. *p.* 524, partly. Aster subulatus, *Michx.! fl.* 2. *p.* 112, in part.

Salt marshes, South Carolina and Florida! (Key West!) to Louisiana! and swamps in saline prairies of Western Louisiana! Arkansas! and Texas! Also in the West Indies! and probably throughout tropical America, &c. Sept.–Oct.—Stem 6 inches to 3 feet high, often diffusely branched from the base, sometimes slightly scabrous on the angles; the slender branchlets spreading or divaricate. Radical or primordial leaves oval or lanceolate, denticulate, petioled, thickish; the cauline 2–4 inches long, 1-nerved, slender, mostly 1–2 lines wide, tapering to a very sharp point; the upper successively shorter and tapering from the base; those of the branchlets reduced to subulate bracts. Heads one-third to one-half smaller than in the preceding species. Scales of the involucre very narrow, greenish, with broad scarious margins, tapering into very sharp points; the innermost as long as the disk. Rays blue, always longer than the disk, and sometimes exserted nearly the length of the involucre. Disk-flowers equalling or exceeding in number those of the ray. Appendages of the style lanceolate-subulate. Achenia narrowly oblong, obscurely about 4-striate. Receptacle somewhat alveolate. —The A. subulatus of Lessing (Sandwich Islands) has smaller heads, less pointed scales of the involucre, and less exserted rays; it is probably a distinct species.

124. *A. Oreganus* (Nutt. under Tripolium): stem rather tall, flexuous, divaricately branched; cauline leaves rather long, linear-sublanceolate, nearly equal, acute, entire, scabrous on the margin; scales of the involucre linear-lanceolate, imbricate, slightly acute, herbaceous; rays narrow. *Nutt.*—Tripolium Oreganum, *Nutt. in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 296.

On the inundated banks of the Wahlamet.—Flowers [heads] very inconspicuous, somewhat fastigiate. *Nuttall.*—This species has not come under our examination. We are inclined (both from the description and the habitat) to suppose it the same, perhaps, as the Tripolium subulatum *β. Nees* (Aster subulatus, *Less.*), from the Sandwich Islands.

125. *A. exilis* (Ell.): stem strict, slender, glabrous, with a few scattered simple branches, bearing solitary or mostly racemose heads; leaves narrowly linear, elongated, subulate-acute, entire, with the margins minute serrulate-scabrous; those of the branches much shorter; scales of the involucre lanceolate-linear, acute, unequal, imbricated in about 3 series; rays (about

20) exserted; achenia slightly pubescent.—*Ell.! sk.* 2. *p.* 344; *DC. prodr.* 5. *p.* 247.

Damp soils in the western districts of Georgia, *Elliott!* Sept.–Oct.—Root apparently annual. "Stem 4–5 feet high, erect, very slender, with a few scattering branches, which near the summit become corymbose. Lower leaves 4 to 6 inches long, scarcely exceeding a line in width, very slightly scabrous along the margin; the upper diminishing in size; those of the branches linear-lanceolate. Flowers [heads] on the lower branches few, on the upper in racemes, on peduncles 2 to 4 lines long. Florets of the ray narrow, twice as long as the involucrum, pale purple; of the disk yellowish." *Ell.*—We have only seen the specimen in Elliott's herbarium. It is allied to the preceding, but is a much more strict plant; the broader and less pointed scales of the involucre more rigid, &c.

126. *A. pauciflorus* (Nutt.): perennial? stem glabrous below, simple, or racemosely branched above; the strict branches and the somewhat equal (linear-lanceolate) scales of the hemispherical involucre densely viscid-pubescent; leaves subulate-linear, somewhat fleshy; the lowermost linear, 3-nerved, tapering into a slender petiole, glabrous; those of the branches subulate, scattered, somewhat viscid; rays (15–24) rather short; achenia narrow, obscurely striate, nearly glabrous.—*Nutt.! gen.* 2. *p.* 154, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 292. Tripolium subulatum, *Nees, Ast. p.* 167; *Hook.! fl. Bor.-Am.* 2. *p.* 15; *Lindl.! in DC. prodr.* 5. *p.* 254.

Margin of saline springs, near Fort Mandan on the Missouri, *Nuttall!* to the Saskatchawan, &c. *Drummond!* Aug.—Stem 8–20 inches high, rather rigid, scarcely flexuous; the heads (about as large as in A. angustus) solitary or nearly so on the simple or dichotomous branches. Lower leaves 4–6 inches long; the upper a line wide, partly clasping, tapering to a sharp point, the margins scarcely if at all scabrous. Scales of the involucre in about 2 series, acute, with scarious margins, rather shorter than the disk, loose. Rays pale purple, linear-oblong. Pappus capillary, nearly in a single series. Appendages of the style lanceolate-subulate; the stigmatic portion narrowed downwards. Achenia beset with a few very minute scattered hairs. Receptacle slightly alveolate.—This is a somewhat peculiar species, but it is certainly an Oxytripolium (with which it accords in habit,) rather than an Alpigenous Aster.

127? A. *occidentalis* (Nutt. under Tripolium): stem nearly simple, with few large and corymbose heads; leaves all linear subulate, clasping, here and there incisely serrate; involucre loosely imbricate; the scales subulate, subherbaceous, nearly equal; rays as long as the disk (pale blue); achenia nearly smooth, scarcely striate, compressed. *Nutt.*—Tripolium (Astropolium) occidentale, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 296.

"Margins of muddy ponds in the Rocky Mountains, 7000 feet above the level of the sea.—Root creeping, slender: stem slender, four inches to a foot high, often only one or two-flowered, seldom more than five or six. Leaves long and narrow, linear, entire, or with one or two pairs of deep incise serratures, almost approaching to a pinnatifid division: branchlets slender, one-flowered: the flower as large as a daisy, with a simple series of pale blue or pink rays. An alpine species, approaching the true Tripolium in the fruit being almost destitute of striation." *Nutt.*—This is described by Mr. Nuttall as a species of his Tripolium § Astropolium (which corresponds with the Oxytripolia of De Candolle). It seems to us, however, to belong rather with the Alpigenous Asters, except that the appendages of the style are lanceolate-subulate. The upper part of the stem and often the margins of the leaves are a little pubescent; and the rays are much exserted beyond the disk. The linear-oblong achenia are clothed with a minute appressed pubescence. The root is probably perennial.

128? *A. frondosus* (Nutt. under Tripolium): stem much branched; leaves linear, entire, clasping, rather obtuse, heads fastigiate; scales of the involucre, loose and leafy, rather obtuse; rays numerous, very small and slender; achenia nearly smooth, about 4-striate. *Nutt.*—Tripolium (Astropolium) frondosum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 296.

"Muddy ponds in the Rocky Mountains, near Lewis River of the Shoshonee; rare: growing partly in the water, and mud. Apparently biennial, with very inconspicuous flowers, and an entirely leafy nearly equal involucrum of about 2 series of leaflets." *Nutt.*—Our specimens are very imperfect, and the flowers not fully developed.

129? *A. spinosus* (Benth.): glabrous, much branched; the branches rush-like, furnished with minute scattered scale-like leaves, which are somewhat caducous, often bearing spines in their axils; heads solitary terminating the branches, or somewhat racemose; scales of the involucre imbricated in 2–3 series, unequal, shorter than the disk, lanceolate, with membranaceous margins; rays short; achenia very glabrous.—*Benth.! pl. Hartw.* (*no.* 148.) *p.* 20.

Texas, *Drummond!*—A singular, apparently leafless species; its long branches terminated by rather small heads; the subulate leaves 1 to 2 or 3 lines long; those of the lower part of the stem unknown. Exterior scales of the involucre ovate-lanceolate; the innermost longer, narrowly lanceolate, with broader membranaceous margins. Rays numerous in a single series, nearly twice the length of the pappus; the ligules linear-oblong. Appendages of the style (of the disk-flowers) short and thick, somewhat conical. Pappus nearly equal, in a single series, capillary. Achenia linear-oblong, slightly compressed, obscurely nerved.—The Texan specimens exhibit fewer short spines, or abortive branchlets, than the Mexican, and some are altogether destitute of them; but we find no other difference.

⁂ The following species reached us too late for insertion in the sections to which they belong.

§ 2. CALLIASTRUM, *p.* 106.

130. *A. mirabilis:* pubescent-scabrous; stem simple, sparingly corymbose-paniculate at the summit; leaves ovate, strigose-scabrous above; the lowest (and radical?) abruptly narrowed into a petiole; the others sessile, rather acute; those of the branches small, roundish; involucre hemispherical, shorter than the disk; the scales regularly imbricated in 4–5 unequal series, oblong-linear, with conspicuous squarrose-recurved obtuse herbaceous tips; rays (about 20) elongated; achenia linear, scarcely compressed, nearly glabrous (minutely hairy under a lens when young), striate.

Columbia, South Carolina (probably in dry soil), *Professor Gibbes!* Sept. —Stem 1–2 feet or more in height, apparently simple, clothed with a close and rather rough pubescence, which is scarcely if at all viscid, sparingly branched towards the summit; the branches bearing solitary or 2–3 scattered heads, or sometimes 4 or 5 heads, somewhat crowded at the summit. Leaves thickish when old, rather strongly pinnately veined and more or less reticulated, all serrate from the base to the apex with close and short mucronate teeth; the lower surface less scabrous and more pubescent than the upper, often somewhat hoary; the cauline 1–3 inches long, uniformly ovate, but the upper gradually diminishing in size, all but the lowermost closely sessile, not clasping; those of the branches similar but much smaller, obtuse, and nearly round; the lowest cauline abruptly narrowed into a margined petiole, or rarely almost cordate; the proper radical leaves wanting. Heads nearly as large as in A. spectabilis, subglobose. Involucre minutely pubescent; the scales between chartaceous and coriaceous in texture, whitish, closely imbricated, with rather short, but conspicuous, squarrose or reflexed herbaceous tips. Rays large, thrice the length of the involucre, blue or violet. Achenia narrow and slender, many-striate, somewhat shorter than the rather rigid (brownish or ferruginous) unequal pappus; the innermost bristles of which are manifestly thickened towards the apex. Appendages of the style subulate-lanceolate, and at length recurved or reflexed, as in Biotia.—This very interesting species furnishes additional evidence of the propriety of re-uniting Biotia with Aster; being exactly intermediate in character and appearance between that group and our subgenus Calliastrum. We have received it only from Professor Gibbes of Charleston, South Carolina, who collected it at Columbia in the year 1835. The Biotia commixta, a plant of unknown origin cultivated in the European gardens, which is said to have a squarrose involucre, has (fide descr. *Nees*,) oblong-lanceolate and partly clasping upper leaves, a very compound corymb, glutinous pubescence, and an involucre resembling Aster macrophyllus, as long as the disk; the scales oblong-lanceolate, acute, &c. &c.—This species should be placed at the commencement of the section Calliastrum, before A. Radula.

§ 3. ASTER proper, *Subdiv.* Concinni, *p.* 115.

131. *A. gracilentus:* very smooth and glabrous throughout; stem slender, strict, simple, loosely paniculate or somewhat corymbose at the summit; cauline leaves linear, elongated, with very scabrous margins, slightly clasping, acute or acuminate; the lower coarsely toothed or incised above the middle, the upper entire; those of the branches and branchlets very small and numerous, erect, linear-subulate; scales of the obovoid involucre (much shorter than the disk) closely imbricated in 3 or 4 series, appressed, lanceolate, acute; the exterior very short; achenia glabrous.

Lincolnton, North Carolina, *Mr. M. A. Curtis!*—Stem rigid, purple, 2–3 feet high, branching only at the summit; the branches and branchlets slender, spreading, terminated by solitary heads, which are smaller than in most states of A. lævis. Lower (cauline) leaves 5–6 inches long, about 3 lines wide, 1-nerved, obscurely reticulate-veined, somewhat shining above, pale beneath, rather rigid, furnished towards the apex on each side with 3 or 4 very coarse and spreading irregular teeth, or appearing somewhat pinnately incised: upper cauline similar, but successively shorter, and entire. Involucre very short; the green tips small and inconspicuous; the exterior lanceolate-subulate; the inner larger, lanceolate-linear, less acute, often tinged with purple. Rays about twice the length of the disk, blue or violet. Ovaries minutely pubescent, but the achenia perfectly smooth and glabrous, similar to those of A. lævis, &c.—We have described this species from a single specimen, which is however so remarkable that it is scarcely liable to be confounded with any other.

27. ERIGERON. *Linn.* (excl. spec.); *Nutt. gen.* 2. *p.* 146.

Erigeron, Stenactis, & Phalacroloma, *DC.;* and also Polyactidium? & Heterochæta?

Heads mostly hemispherical, many flowered; the ray-flowers very numerous and usually in more than one series, pistillate; those of the disk tubular, perfect; or some of the exterior (rather transformed ray-flowers) filiform-tubular and truncate, pistillate. Scales of the involucre mostly equal, narrow, in a single or somewhat double series. Receptacle flat, naked, punctate or scrobiculate. Appendages of the style very short and obtuse. Achenia compressed, usually pubescent, commonly with 2 lateral nerves. Pappus a single series of capillary scabrous bristles, rather few (12–30) in number, often with minute setæ intermixed or forming an indistinct outer series, or sometimes with a distinct and short, squamellate-subulate or setaceous (or somewhat coroniform) exterior pappus; the inner rarely wanting in the ray. —Herbs, or rarely suffrutescent plants; with entire, toothed, or lobed leaves. Heads solitary, corymbose, or paniculate. Rays white, blue, or purple.

It appears to us impossible to effect generic divisions among these plants, by characters derived from the single or double series of rays, or from the simple or double pappus, or by any combination of these. The characters of our sections, or subgenera, exhibit the diversities which the North American species present in these respects. As a whole, the genus is distinguished from Diplopappus by the very short and obtuse appendages of the style, the nearly simple involucre, and the naked receptacle: the same characters also distinguish it from Aster; but the Alpigenous Asters almost connect the two genera.

§ 1. *Rays in several series, shorter than the involucre: pappus simple: achenia 2-nerved: corolla of the disk mostly 4-toothed: annual or biennial herbs: heads very small, cylindrical.*—CÆNOTUS, Nutt.

1. *E. Canadense* (Linn.): stem erect, hispid, or sometimes nearly glabrous, paniculately very much branched above; leaves lanceolate-linear, mostly entire, hispidly ciliate; heads small, very numerous, corymbose-paniculate or somewhat racemosely disposed on the branchlets; rays (white) scarcely longer than the pappus; achenia oblong, sparsely hispid.—*Linn.! spec.* 2. *p.* 863; *Fl. Dan. t.* 292; *Michx.! fl.* 2. *p.* 123; *Nutt.! gen.* 2. *p.* 148; *Hook.! fl. Bor.-Am.* 2. *p.* 20; *Darlingt.! fl. Cest. p.* 471; *DC.! prodr.* 5. *p.* 289. E. pusillum, *Nutt.! l. c.* (a depauperate form.) Senecio ciliatus, *Walt.*

Fields and waste or open places, Canada! and Saskatchawan! throughout the United States! to Texas! and in Oregon! Also apparently indigenous to almost every part of the world, and naturalized in Europe. July–Oct.—A common weed, very variable in size (from 5 inches to 5 feet) and mode of growth. Involucre at first cylindrical, at length spreading. Ligule of the ray many times shorter than the tube. Corolla of the disk (perhaps always?) 4-toothed. Radical leaves often pinnately incised or lobed.—*Horse-weed. Butter-weed.*

2. *E. divaricatum* (Michx.): decumbent, diffuse, and very much branched, the branchlets fastigiate, strigose-hirsute and often somewhat hispid; leaves linear or subulate; heads small, loosely paniculate-corymbose; rays (purple) not longer than the pappus; achenia oblong, almost glabrous.—*Michx.! fl.* 2. *p.* 123; *Pursh! fl.* 2. *p.* 534; *Nutt. l. c.*; *DC. l. c.*

Throughout the Western States, from Illinois! and Upper Missouri! to Louisiana! along the Mississippi; in similar situations with the preceding, flowering during the whole summer.—Plant rarely exceeding 6 inches in height, but very diffuse, at length spreading out one or two feet in width.

§ 2. *Rays crowded or in two or more series, longer than the involucre: pappus simple or sometimes with minute setæ intermixed or forming an indistinct external series: achenia 2-nerved: mostly perennial.*—EUERIGERON. (Euerigeron & Trimorphæa, *DC.* excl. spec.)

* *Cæspitose acaulescent (chiefly alpine) species: scapes bearing a single head: leaves mostly 3-cleft or divided: pistillate flowers all ligulate.*

3. *E. compositum* (Pursh): canescently hirsute; leaves on long petioles, 1–3-ternately divided or parted; the ultimate segments linear, obtuse; scapes

naked or with a few linear bracts; rays twice the length of the involucre; achenia hirsute; pappus hispid-scabrous, as long as the corolla of the disk.—*Pursh! fl.* 2. *p.* 535; *Hook.! fl. Bor.-Am.* 2. *p.* 17 (vars. β. & γ.); *Nutt.! in jour. acad. Philad.* 7. *p.* 32, *& in trans. Amer. phil. soc. l. c.; DC. prodr.* 5. *p.* 288. Cineraria Lewisii, *Richards.! appx. Frankl. jour. ed.* 2. *p.* 32.

β. smaller; leaves 3-parted; the segments very short, 3-lobed.—E. compositum, *Hook. in Linn. trans.* 14. *p.* 374, *t.* 13.

Interior of Oregon, on the banks of the Kooskoosky! Flat Head River! &c., and on the Rocky Mountains! Also east of the mountains between lat. 64°, and the Arctic Sea, *Richardson!* β. Arctic coast and islands! June–July.—Scapes 2–6 inches high, often leafy near the base. Head large; the rays white or pale pink. Bristles of the pappus about 15, with a few minute interposed setæ.

4. *E. trifidum* (Hook.): hirsute; leaves on long petioles, 3-cleft; the segments short, entire, or the lateral often 2-lobed; scapes nearly naked; rays twice the length of the very hirsute involucre; achenia minutely hairy; pappus hispid-scabrous, as long as the corolla of the disk.—*Hook.! fl. Bor.-Am.* 2. *p.* 17, *t.* 120.

Rocky Mountains, *Drummond!*—Resembles the preceding; the heads about the same size. Leaves slightly fleshy.

5. *E. pedatum* (Nutt.): somewhat glabrous; leaves on slender sparsely ciliate-hispid petioles, 3-parted; the segments linear, obtuse, entire, or the lateral 2-lobed or toothed; scapes naked; rays longer than the scarcely hirsute involucre; achenia minutely hirsute; pappus hispid-scabrous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 308.

Oregon, on the gravel bars of small streams to the east of Walla-wallah, *Nuttall!*—Resembles E. trifidum; but the leaves are glabrous, except the strongly ciliate petioles, and the lobes more slender; the heads are scarcely half the size, and the involucre somewhat glabrous. Scapes glabrous, 2–3 inches high. Rays 'pale rose-color,' nearly in a single series.

6. *E. radicatum* (Hook.): minutely hirsute and somewhat canescent; leaves linear-spatulate, entire, rather thick or fleshy; scapes with one or two small leaves; rays not twice the length of the tomentose or hirsute involucre; achenia minutely hairy; bristles of the pappus few, scabrous, shorter than the corolla.—*Hook.! fl. Bor.-Am.* 2. *p.* 17, *t.* 122; *Nutt.! in trans. Amer. phil. soc. l. c.*

Near Jasper's Lake in the Rocky Mountains, *Drummond!* and in the Blue Mountains of Oregon, *Nuttall!*—Leaves nearly sessile, glabrous when old, less than an inch long, clustered. Scapes 2 or 3 inches high. Heads smaller than in E. uniflorum; the rays spreading, white.

8. *E. nanum* (Nutt.): canescently hirsute; leaves narrowly linear, and slightly spatulate, scarcely obtuse; scapes naked above; rays scarcely twice the length of the hirsute-pubescent involucre; achenia minutely hairy; pappus about the length of the corolla, hispid-scabrous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 308.

Rocky Mountains, in about lat. 42°, *Nuttall!*—Leaves in a dense cluster, 1–2 inches long, scarcely half a line wide, somewhat petioled. Scapes 2–4 inches long, tomentose-pubescent.—"Resembles the preceding; but has hirsute leaves, and a different achenium and pappus." *Nutt.*

8. *E. lanatum* (Hook.): very woolly; leaves spatulate, petioled, entire, the lowermost often 3-lobed or toothed at the apex; scapes mostly leafless; the upper portion and the involucre extremely woolly; rays elongated; achenia glabrous; pappus hispid-scabrous, as long as the corolla of the disk.—*Hook.! fl. Bor.-Am.* 2. *p.* 17, *t.* 121; *DC. prodr.* 7. (*mant.*) *p.* 275.

Summits of the Rocky Mountains, between lat. 52° and 56°, *Drummond!*—Scapes about 3 inches high. Head much larger than in E. uniflorum; the rays white or rarely tinged with purple.

* * *Somewhat cæspitose (subalpine) species: stems mostly short, leafy, bearing one or few heads: leaves entire: the inner series of pistillate flowers often filiform-tubular, truncate.* (Trimorphæa, *Cass.*)

9. *E. uniflorum* (Linn.): stem short, bearing a single head; leaves hirsute; the cauline lanceolate or linear; the radical ones spatulate and becoming somewhat glabrous; pistillate flowers nearly all ligulate; the rays somewhat erect, scarcely twice the length of the very woolly involucre.—*Linn.! spec.* 2. *p.* 864, *& fl. Lapp. t.* 9, *f.* 3; *Hook.! fl. Bor.-Am.* 2. *p.* 17. E. alpinum, *Pursh, fl.* 2. *p.* 532. E. alpinum γ. *DC.! prodr.* 5. *p.* 290. E. pulchellum β. Unalaschkense, *DC. l. c. p.* 287. E. humile, *Graham, in Edinb. phil. jour.* 1828. *p.* 175?

Arctic shore and islands from Greenland to Behring's Straits and Unalaschka! Summits of the Rocky Mountains, *Drummond!* Labrador!—The involucre and its dense woolly covering are usually purple in the American specimens, as they frequently are in the European. There are minute slightly squamellate setæ mixed with the longer bristles of the pappus, which are sometimes so copious as to form an indistinct outer series, in this species, and also in E. alpinum and E. grandiflorum.

10. *E. grandiflorum* (Hook.): very hirsute; caudex thick; stems short, bearing a single head; radical leaves oblong-spatulate; the cauline oval-lanceolate; pistillate flowers all ligulate; the rays spreading, twice the length of the very densely woolly involucre.—*Hook.! fl. Bor.-Am.* 2. *p.* 18, *t.* 123.

Summits of the Rocky Mountains, *Drummond!*—Stems 4–6 inches high. Heads very large for the size of the plant. Scales of the involucre with purplish and naked tips; the woolly covering white. Rays white or purple.—Can this also be the E. grandiflorum of Hoppe?

11. *E. alpinum* (Linn.): somewhat hirsute; stem somewhat elongated, bearing one or few heads; leaves lanceolate; the radical ones spatulate, tapering into a petiole; the inner pistillate flowers numerous, tubular-filiform, truncate; the rays spreading, twice the length of the hirsute involucre; pappus of the disk as long as the corolla.—*Linn.! spec.* 2. *p.* 864; *Engl. bot. t.* 464; *Hook.! fl. Bor.-Am.* 2. *p.* 18; *DC.! prodr.* 5. *p.* 291. (*a.*)

β. leaves narrower; branches elongated. *Hook.! l. c.*

γ. tall (about a foot high); heads several. *Hook.! l. c.*

Rocky Mountains, *Drummond!*—Rays purple. Apparently a very rare species in this country.—The exterior pappus, if it may so be called, in this species was observed by Cassini (*Dict. sci. nat.* 37, *p.* 485), who therefore referred it to his genus Stenactis.

12. *E. glabratum* (Hoppe): almost glabrous; stem tall, simple; radical leaves spatulate; the cauline linear-lanceolate; raceme terminal, many-flowered; peduncles elongated, scarcely corymbose, simple or branched; scales of the small involucre very narrow [pistillate flowers mostly or wholly ligulate]; rays inconspicuous, immersed in the copious pappus. *Hook.*—"*Hoppe & Hornsch. cent.; Bl. & Fing. comp. fl. Germ.* 2. *p.* 364"; *Koch, fl. Germ. & Helv. p.* 354; *Hook.! fl. Bor.-Am.* 2. *p.* 18. E. alpinum β. ramosum, *Wahl. fl. Lapp. p.* 207. E. alpinum β. *DC. l. c.* E. racemosum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 312.

β. peduncles contracted.—E. racemosum β. angustifolium, *Nutt.! l. c.*

Hudson's Bay to the Rocky Mountains, and from Saskatchawan to Fort

Franklin on the Mackenzie River, *Richardson! Drummond!* Rocky Mountains in about lat. 42°, *Nuttall!*—Plant from 4–6 inches to 2 feet high.—Our specimens from the north of Europe very well accord with the American plant.

13. *E. nivale* (Nutt.): stems somewhat cæspitose and hairy at the base, mostly bearing single heads; radical leaves spatulate; the cauline lanceolate, acuminate, somewhat clasping; involucre and the summit of the stem glandularly pubescent; the scales linear and acuminate (not hirsute); pappus longer than the linear elongated somewhat pubescent achenium. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 311.

Central chain of the Rocky Mountains, lat. 42°, towards the sources of the Colorado of the West; near the limits of perpetual snow, *Nuttall.*—"Allied to A. alpinus, but with subamplexicaul leaves, widest at the base. Pappus longer than the involucre. Rays? A few filiform pistillate florets outside the discal ones. Achenium long and linear, compressed, slightly silky." *Nutt.*—We have not examined this species, which is founded, we believe, on a single specimen. We see not how it is to be clearly distinguished from some states of Hooker's E. alpinum, in which the upper cauline leaves are often broadest at the base.

* * * *Stem leafy at the base, elongated and scape-like above, bearing a single head: pistillate flowers all ligulate.*

14. *E. scaposum* (DC.): stem decumbent and leafy at the base, naked and much elongated above, pubescent; leaves hirsute with appressed hairs, lanceolate-oblong or spatulate, coarsely toothed; the radical ones crowded, somewhat petioled; those of the sterile branches or lower part of the flowering stems lanceolate, partly clasping; rays very numerous, about twice the length of the canescently hirsute involucre; achenia hirsute.—*DC. prodr.* 5. *p.* 287; *Benth.! pl. Hartw. p.* 17. Aster rivularis, *Less. in Linnæa,* 5. *p.* 142.

Rio Brazos, Texas, *Drummond!* Also Texas, *Mr. Callana!*—Scape or naked summit of the stem 4–7 inches long. Rays apparently white.—The Texan plant accords with that of Hartweg from the north of Mexico; and also with a specimen from Jalapa, received from Prof. Schlechtendal, under the name of Aster rivularis, *Less.*

* * * * *Stem leafy: heads mostly corymbose or panicled: pistillate flowers all ligulate.*

15. *E. Bellidiastrum* (Nutt.): annual; stem leafy throughout, somewhat corymbosely branched, hirsute-pubescent; leaves entire, oblong-linear or linear-spatulate, obtuse, tapering to the base, the lower petioled; heads solitary terminating the branches, pedunculate; rays (pale red) nearly twice the length of the involucre, scarcely in a double series; achenia minutely pubescent.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 307.

Borders of the Platte, within the Rocky Mountains, *Nuttall!*—Stem about a foot high. Leaves more or less pubescent, 1–2 inches long, 2–4 lines wide, tapering into a slender narrowed base, or the lowermost with attenuate petioles, thickish, more or less pubescent. Heads few, small. Scales of the involucre somewhat strigose-canescent. Pappus simple, of 15–20 very slender deciduous bristles, rather shorter than the corolla.

16. *E. bellidifolium* (Muhl.): stoloniferous at the base, hirsute, especially when young, with soft spreading hairs; radical leaves obovate or broadly spatulate, somewhat serrate or entire; the cauline (often few and distant) oblong or lanceolate-oblong, partly clasping, mostly entire; heads few (1–5, rarely 7–9) and large, corymbose; the lateral pedicels elongated; rays (about 50) rather broadly linear, scarcely in a double series, twice the length of the involucre, light bluish-purple; achenia glabrous.—*Muhl.! in Willd. spec.* 3.

p. 1958; *Bot. mag. t.* 2402; *Pursh! fl.* 2. *p.* 502; *Ell. sk.* 2. *p.* 393; *DC.! prodr.* 5. *p.* 285. E. pulchellum, *Michx.! fl.* 2. *p.* 124 (excl. syn. *Gronov.* which relates to Marshallia!); *Darlingt. fl. Cest. p.* 472; not of *DC.*, nor of *Hook.?*

Borders of woods and thickets, Canada! (and in the wooded country from lat. 54°–64°, fide *Richardson*) to Louisiana! May–June, or in the Southern States, March–April.—Stem simple, 9–20 inches high. Radical leaves clustered, 2–3 inches long, and 1–2 wide, very obtuse. Cauline leaves often very few, but sometimes numerous. Pedicels thickened or obconical at the summit. Pappus simple.—Varies considerably in the degree of the pubescence, the more or less entire or toothed leaves; but perfectly distinguished from E. Philadelphicum (with which it has sometimes been confounded) by the larger heads, bluish-purple (not reddish-purple) much broader rays, glabrous achenia, and by the stolons, &c. It is the earliest-flowering species in the Northern States.—The plant we have under the name of E. pulchellus, *Hook. fl. Bor.-Am.*, is the same with the E. glabellus *β.* of the same work, whence (although it may have been so labelled by mistake) we have not cited the synonym here, particularly as the character does not well accord with our E. bellidifolium. Hooker also mentions a variety from Oregon, with the leaves deeply toothed, which is probably what we consider a variety of E. Philadelphicum.

17. *E. Philadelphicum* (Linn.): hirsute or hairy; stem slender, loosely corymbose above; leaves membranaceous, with a conspicuous midrib, ciliate; the radical and lowermost spatulate-oblong, tapering into a slender base or margined petiole, obtusely serrate or nearly entire; the upper cauline oblong, clasping and mostly cordate at the base, entire, or rarely somewhat serrate; heads corymbose (rather small); rays innumerable, very narrow, pale reddish-purple or flesh-color, more than twice the length of the involucre; achenia minutely hairy.—*Linn.! spec.* 2. *p.* 863; *Willd.! spec.* 3. *p.* 1957; *Michx.! fl.* 2. *p.* 123; *Pursh! fl.* 2. *p.* 533; *Darlingt.! fl. Cest. p.* 462; *Hook. compan. to bot. mag.* 1. *p.* 96; not of *Ell.* or *DC.*, nor of *Bart.* E. purpureum, *Ait. Kew.* (*ed.* 1.) 3. *p.* 186; *Pursh! l. c.*; *Hook.! fl. Bor.-Am.* 2. *p.* 19; *DC.! prodr.* 5. *p.* 286. E. amplexicaule, *Torr.! in Short, cat. Kentucky plants.*

β. stem stout; cauline leaves larger, mostly coarsely and sharply serrate; corymbs compound; rays pale or nearly white.

γ.? stem tall and stout, glabrous above, as also the numerous sharply serrate leaves; corymbs compound.

δ. "stem elongated and slender towards the summit, very hairy at the base; radical leaves spatulate-lanceolate, dentate; flowers white; the rays not much longer than the disk." *Nutt.*—E. purpureum *β.* attenuatum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 307.

Woodlands and fields, common nearly throughout North America, from Hudson's Bay and the Arctic Circle (*Richardson*) Saskatchawan! &c. to Louisiana! and west to Oregon! and California! *γ.* Oregon, *Dr. Scouler! Drummond!* *δ.* Oregon and Arkansas, *Nuttall!* June–Aug; the varieties *β.* & *γ.* commencing in April or May in the Southern States.—Stem 1–2, in *β.* & *γ.* often more than 3 feet high, villous-hirsute towards the base. Leaves bright green, thin; the broad and whitish midrib conspicuous underneath. Pedicels naked, thickened at the summit. Scales of the involucre somewhat hairy on the back; the margins scarious. Pappus simple.—Variable as to size &c., but a well-marked species. The var. *δ.* appears to be an attenuated state of *β.*, and like it has very pale rays, and probably grows in shade.—We know not why Linnæus applied to this species the name of E. Philadelphicum, since his specimen, communicated by Kalm, is said to come from Canada.

18. *E. quercifolium* (Lam.): pubescent; stem loosely corymbose above; radical leaves obovate-oblong, mostly lyrate-pinnatifid or deeply sinuate-toothed; the cauline scattered, oblong-lanceolate, partly clasping, sharply toothed, or the uppermost entire; heads small and numerous; rays innumerable, almost capillary, twice the length of the involucre, pale purple; achenia minutely hairy.—*Lam. ill. t.* 681, *f.* 4; *Poir. dict.* 7. *p.* 491; *Pursh! fl.* 2. *p.* 533; not of *DC.* E. Philadelphicum? *Ell.! sk.* 2. *p.* 396; *DC.! prodr.* 5. *p.* 285; not of *Linn.*, *Willd.! &c.* E. Philadelphicum, *Reichenb. ic. exot. t.* 134?

Fields &c., Florida (*Lamarck*, *Nuttall!*) to Georgia! S. Carolina! and west to Louisiana! and Mississippi! March–June.—Stem 1–2 feet high, furrowed. Heads rather smaller than in E. Philadelphicum; the involucre, and the (often very pale) rays resembling that species. Pappus simple.—This is without doubt the E. quercifolium of Lamarck; and is probably distinct from the preceding, to which some states nearly approach. The form with sparingly toothed leaves is the E. Philadelphicum *a.* of De Candolle; and that with lobed leaves is his var. quercinum.

§ 3. *Rays in a double or single series, much longer than the involucre: pappus double (both in the disk and ray); the exterior short, more or less distinct, setaceous or squamellate-subulate: achenia 2–5-nerved: perennial.*—STENACTIS, Cass, Nees, (*excl. spec.*) (Heterochæta, *DC.?* Erigeron § Phænactis, &c., *Nutt.*)

* *Exterior pappus somewhat indistinct, of short setæ, more or less intermixed with the inner: rays in a double series.*

19. *E. glaucum* (Ker): stems several from a persistent caudex or rhizoma, ascending, more or less villous with soft slightly viscid hairs, simple or sparingly branched, terminated by large solitary heads; leaves spatulate-oblong, obtuse, sessile, the upper often hairy; the lowest spatulate-obovate, somewhat 3-nerved, tapering into a margined petiole: rays very numerous (about 100), twice the length of the pubescent or villous involucre; achenia sparsely hairy, 4-nerved.—*Ker, bot. reg. t.* 10; *DC. prodr.* 5. *p.* 284. (Aster Bonariensis, *Spreng. syst.* 3. *p.* 528.) Stenactis glauca, *Nees, Ast. p.* 275. Aster Californicus, *Less. in Linnæa*, 6. *p.* 121; *Hook. & Arn.! bot. Beechey*, *p.* 146; *Nees*, *Ast. p.* 53; *DC. prodr.* 5. *p.* 228.

β. plant more villous throughout.—E. maritimum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 310. Woodvillea calendulacea, *DC. prodr.* 5. *p.* 318?

Coast of California and Oregon, *Menzies! Capt. Beechey! Douglas? Nuttall!* (*β.*)—Stem or caudex decumbent, sending up mostly simple branches in the wild state, 3–12 inches high, terminated by solitary heads as large as the Marigold (1 to nearly 2 inches in diameter including the pale red rays), more or less pubescent or villous, as well as the involucre, with soft spreading hairs, which are somewhat viscid towards the summit of the stem. Leaves rather succulent; the margins of the upper ones often villous-ciliate, and the surfaces of the uppermost also villous in var. *β.*—The more hairy variety of this plant (the rays of which appear yellowish in dried specimens) is without much doubt the Woodvillea calendulacea of De Candolle: no other plant of Douglas's collection accords with the description. We have also adopted the suggestion of Hooker & Arnott (*Bot. Beechey, suppl. p.* 351), as to the identity of the Aster Californicus, *Less*, (a less villous form of the same species), with Erigeron glaucum, *Ker*, of unknown origin, supposed to come from South America; but which these authors, apparently with good reason, suspect to have been raised from seeds brought from California or Oregon by Mr. Menzies; whose dried specimens, we may remark, almost entirely agree with the cultivated E. glaucum.

20. *E. macranthum* (Nutt.): nearly glabrous; stem leafy to the summit; leaves glabrous, with hispidly ciliate margins, obtuse, mucronulate; the upper oblong-ovate or elliptical, partly clasping; the lowermost oblong-spatulate, tapering into a petiole; heads few (3–5) on simple naked peduncles; rays numerous, twice the length of the glabrous and slightly glandular involucre; achenia slightly hairy, 2-nerved.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 310.

β. leaves very acute; heads larger.—E. grandiflorum, *Nutt.! in jour. acad. Philad.* 7. *p.* 31, not of *Hook.*

Sources of the Missouri, and plains of the Platte, near the Rocky Mountains, *Mr. Wyeth! Nuttall!* Aug.—Leaves thickish, reticulated; the upper about an inch long and half an inch wide. Heads smaller than in E. speciosum; the rays blue, fewer in number. Involucre glabrous to the naked eye, minutely glandular under a lens.—The variety with acute leaves approaches E. speciosum, from which, indeed, it appears to be distinguished chiefly by its glabrous involucre.

21. *E. speciosum* (DC.): stem glabrous below, much branched and sparsely hispid above, leafy to the summit; leaves lanceolate, mostly acute or acuminate, entire, hispidly ciliate, closely sessile or somewhat clasping; the radical ones spatulate and tapering into a petiole; heads corymbose, terminating the leafy branchlets; rays very numerous (about 120), nearly thrice the length of the very narrow hispid setigerous-mucronate scales of the involucre; achenia minutely hairy, 2–4-nerved.—*DC.! prodr.* 5. *p.* 284, *&* 7. (*mant.*) *p.* 274. Stenactis speciosa, *Lindl.! bot. reg. t.* 1577; *Hook. bot. mag. t.* 3607.

β. stem often simple, bearing few heads; leaves narrowly lanceolate, cuspidate-acuminate.—E. speciosum, *Nutt.! in trans. Amer. phil. soc. l. c.*, chiefly. E. glabellum *γ.* mucronulatum, *Hook.! fl. Bor.-Am.* 2. *p.* 19.

California and Oregon, *Douglas! β.* Plains of the Oregon, common, *Dr. Scouler! Douglas! Nuttall!*—Stem tall and stout, furrowed. Leaves often nearly glabrous, except the margins, 2–4 inches long. Heads (including the showy violet-purple ray) nearly 2 inches in diameter. Scales of the involucre attenuate, hispid with spreading whitish hairs. Achenia 2–3- (sometimes 4-) nerved. Pappus with short setæ intermixed at the base, forming an indistinct exterior series.

22. *E. glabellum* (Nutt.): stem simple, or sparingly branched and somewhat naked above, pubescent or nearly hispid towards the summit; leaves mostly glabrous, with ciliate and scabrous margins, entire; the upper cauline (small) lanceolate or oblong-lanceolate, acute or mucronate-acuminate, closely sessile or partly clasping; the lower and radical ones spatulate, with a long tapering base or margined petiole; heads 3–7, corymbose; the peduncles naked, thickened at the summit; rays very numerous (more than 100), twice the length of the narrowly linear acute canescently hispid scales of the involucre; achenia sparsely hispid, nearly glabrous when mature, 2–3-nerved.—*Nutt.! gen.* 2. *p.* 147, *& in jour. acad. Philad.* 7. *p.* 147; *Richards. appx. Frankl. journ. ed.* 2. *p.* 30; *Hook.! bot. mag. t.* 2923, *& fl. Bor.-Am.* 2. *p.* 19; *DC.! l. c.* (Varies, 1. with the radical leaves lanceolate, sometimes toothed; the cauline linear; head often solitary: 2. stem stout; leaves larger; heads larger, 7–10, in a simple or slightly compound corymb.)

β. asperum: stem and leaves rough with a strigose-hirsute pubescence (rays nearly white?).—E. asperum, *Nutt.! gen.* 2. *p.* 147; *DC. prodr.* 5. *p.* 286. (E. pulchellus, *α. Hook. fl. Bor.-Am.* 2. *p.* 19 (excl. syn.), fide *herb. Greene, & herb. Torr.*)

γ. *pubescens* (Hook.! l. c.): stem and leaves hirsute throughout with a spreading pubescence.

Prairies and open plains, Missouri, *Nuttall! Mr. Nicollet! &c.* St. Croix River, *Dr. Houghton!* Saskatchawan, *Drummond!* and throughout the woody country to lat. 64°, *Richardson!* Also in Oregon near the Rocky Mountains, *Nuttall! &c.* and on Lewis River, *Mr. Tolmie!* β. Missouri, *Nuttall!* to Arctic America, *Richardson!* γ. Prairies in the Rocky Mountains (lat. 52°), *Drummond!* July–Aug.—Stems 10 inches to 2 feet high, often several from the same root; the lower portion, as well as the radical leaves often entirely glabrous: the upper cauline leaves usually small and scattered, lanceolate or nearly linear, pointed. Heads about as large as in E. bellidifolium, or sometimes nearly equalling those of E. speciosum, to which this species is evidently allied. Rays pale purple or blue, sometimes nearly white.—The pubescence is exceedingly variable, and we have a full series of specimens, connecting the most hairy forms with the nearly smooth and glabrous plant.

* * *Exterior pappus of manifest, subulate or squamellate setæ: rays nearly in a single series.*

23. *E. pumilum* (Nutt.): very hirsute throughout with spreading rigid hairs; stems numerous from the same root, or cæspitose, simple or sparingly branched, terminated by solitary heads; leaves entire, lanceolate or linear, tapering to the base; the radical and lowermost linear-spatulate, tapering into a petiole; rays somewhat in a double series, twice the length of the very hirsute involucre; achenia sparsely hairy; exterior pappus setaceous-subulate, very short.—*Nutt.! gen.* 2. *p.* 147, *& in trans. Amer. phil. soc. l. c.; DC. prodr.* 5. *p.* 286. E. hirsutum, *Pursh! fl.* 2. *p.* 742, not of *Lour.*

Upper Missouri, *Bradbury! Nuttall! Mr. Nicollet!* and plains of the Platte near the Rocky Mountains, *Nuttall!* May–June.—Stems 6–10 inches high, rather stout, clothed like the leaves with almost hispid hairs, simple or forked, or rarely divided into 3 or 4 branches, naked at the summit, bearing single heads nearly as large as those of E. alpinum. Leaves rather rigid; the lowest 2–3 inches long, including the margined petiole, 2–3 lines wide near the apex. Rays white. Bristles of the inner pappus 15–20, scabrous, slightly shorter than the corolla; the exterior rather fewer, very short, but forming a distinct outer series.—In Nuttall's Genera, the pappus is said to be "double, the internal short, about 12-rayed": in Mr. Nuttall's recent memoir it is said to be single, of about 20 rays. The exterior pappus is abundantly manifest in all the specimens we have examined.

24. *E. concinnum:* very hirsute throughout with long spreading hairs; stems several from the same root or caudex, slender, leafy, branching above; the branches or peduncles terminated by single heads; leaves narrowly linear, elongated, entire, attenuate at the base, the lowermost tapering into a petiole; rays narrowly linear, numerous (about 50), in a single series, twice the length of the very hirsute involucre; achenia (immature) hirsute; exterior pappus setose-squamellate.—Distasis? concinna, *Hook. & Arn.! bot. Beechey, suppl. p.* 350.

"Snake River, below the Salmon Falls in the Snake Country" (interior of Oregon), *Mr. Tolmie!*—Stems about a span high; the plant hoary or canescent with the hirsute pubescence, resembling the preceding species, but much more slender throughout. Heads about the size of a Daisy; the rays in the dried specimens bright blue. Inner pappus of 8–10, or more commonly 12–15, hispid-scabrous bristles, nearly the length of the corolla: the exterior fewer, somewhat chaff-like, squamellate-subulate (as in Chrysopsis), forming a distinct outer pappus, rather shorter than the ovary. Receptacle areolate. Appendages of the style, as in all the genus, very short and obtuse.

§ 4. *Rays very numerous, nearly or quite in a single series, longer than the involucre: pappus manifestly double; the exterior very short, subulate or squamellate, or almost coroniform; the interior of few somewhat deciduous bristles, often caducous or wanting in the ray: achenia 2-nerved: annual or biennial.*—Phalacroloma, Cass. (Stenactis, *DC.* partly, excl. char.[*])

* *Pappus of the ray and disk similar.* (Erigeron § Oligotrichium, *Nutt.*)

25. *E. tenue:* branched from the base, minutely strigose or scabrous; stems slender, ascending or erect, bearing few (1–9) small heads on slender peduncles; leaves short, with minutely ciliate and scabrous margins; the radical ones spatulate-oblong, somewhat lyrately toothed or sparingly lobed, on slender petioles; the lower cauline mostly oblong-linear, entire; rays very narrow and numerous, twice the length of the almost glabrous involucre; inner pappus of 12–20 rather fragile bristles.—E. quercifolium, (*Nutt.!*) *DC.! prodr.* 5. *p.* 285, certainly not of *Lam.*

Prairies, and banks of rivers, Arkansas, *Nuttall!* Louisiana, *Dr. Carpenter! Dr. Hale! Dr. Leavenworth!* Texas, *Drummond!* April–June.—② or ♃ ? Stems slender, 5–10 inches high, pubescent near the base. Leaves somewhat glabrous, the lower about an inch long. Heads smaller than in E. quercifolium, when several in number somewhat corymbose; the peduncles slightly thickened at the summit. Rays purplish, very slender, more than 100 in number, but nearly or quite in a single series. Inner pappus similar in the disk and ray, of 12 to 20 slender rather fragile scabrous bristles; the exterior very manifest, setaceous-squamellate, much shorter than the slightly pubescent achenia.

26. *E. divergens:* somewhat hoary with a minute hirsute pubescence, diffusely branched from the base; leaves small, entire, acute; the radical somewhat spatulate, narrowed into a short petiole; the cauline scattered, sessile, linear, narrowed at the base; heads (small) mostly solitary terminating the naked branchlets or peduncles; rays very narrow and numerous, twice the length of the hirsute involucre; inner pappus of few (8–12) very slender and deciduous bristles.—Erigeron (Oligotrichium) divaricatum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 311, not of *Michx.*

Rocky Mountains, and plains of the interior of Oregon, *Nuttall!*—① Stems about a foot high, diffuse, ascending, slender, at length much branched. Leaves half an inch to an inch long, 1 to 2 lines wide, mucronate-acute. Heads rather smaller than in E. tenue; the rays (white, *Nutt.*) nearly similar; the exterior pappus shorter.

* * *Inner pappus of the ray almost or entirely wanting.* (Phalacroloma, *Cass.*, proper.)

27. *E. annuum* (Pers.): sparsely hirsute or hispid with more or less spreading hairs; stem corymbosely branched above; leaves coarsely and sharply serrate-toothed; the radical and lowermost ovate, obtuse, tapering into a margined petiole; the others ovate-lanceolate, sessile, acute and entire at each end; the uppermost lanceolate, mostly entire; rays very narrow, not twice the length of the sparsely setose-hispid involucre.—*Pers. syn.* 2. *p.* 431; *Hook. fl. Bor.-Am.* 2. *p.* 20. E. heterophyllum, *Muhl.! in Willd. spec.* 3. *p.* 1956; *Pers. l. c.*; *Pursh! fl.* 2. *p.* 534; *Nutt.! gen.* 2. *p.* 148; *Bart. veg. mat. med. t.* 21; *Darlingt.! fl. Cest. p.* 472. E. strigosum,

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[*] None of the North American species of De Candolle's Stenactis accord with his generic character, in which the simple pappus of the ray is said to be similar to the *inner* pappus of the disk; and it is equally at variance with the character given by Nees. The two Asiatic species belong to Stenactis, of Nees.

Bigel. fl. Bost. ed. 2. *p.* 302. Aster annuus, *Linn.! hort. Cliff. p.* 409, & *spec.* 2. *p.* 875; *Willd. enum.* 2. *p.* 884. Bellis ramosa, &c. *Cornut. Canad. t.* 194. Pulicaria annua, *Gærtn. fr.* 2. *p.* 462. Diplopappus dubius, *Cass. in bull. philom.* 1817 & 1818. Stenactis dubia, *Cass. in dict. sci. nat.* 37. *p.* 485. S. annua, *Nees, Ast. p.* 273. S. annua & S. strigosa (excl. syn.), *DC.! prodr.* 5. *p.* 299. Phalacroloma acutifolium, *Cass. in dict. l. c.* 39. *p.* 405.

Fields and waste places, Canada! and throughout the Northern States! to Kentucky! a common weed; now naturalized throughout Europe. May or June–Aug.—② or ①? Stem stout, 2–4 feet high, striate or angled. Radical and lower leaves large. Heads as large or larger than E. strigosum, but less showy; the ray (white or tinged with purple) being shorter.—*Flea-bane, Daisy.*—Nuttall says the ray has no pappus; and Nees, that it is very deciduous. We find the exterior squamellate-coroniform pappus, but no trace of an interior: both the pappus and the achenia entirely correspond with the following species; and, indeed, specimens almost intermediate between the two may sometimes be observed.

28. *E. strigosum* (Muhl.): more or less strigose with a minute appressed pubescence; stem slender, paniculate-corymbose at the summit; leaves all entire or slightly serrate; the radical and lower cauline oval or spatulate, 3-nerved, tapering into a slender petiole; the upper ones scattered, lanceolate, oblanceolate, or linear, acute or obtuse; rays narrowly linear, about twice the length of the minutely hispid or pubescent involucre.—*Muhl.! in Willd. spec.* 3. *p.* 1956; *Ell. sk.* 2. *p.* 394; *Hook.! fl. Bor.-Am.* 2. *p.* 18; *Darlingt. fl. Cest. p.* 471. E. ambiguum, *Nutt.! gen.* 2. *p.* 147. E. longifolium, *Hort. Par.*, ex *Cass.*, not of *Lam.* E. nervosum, *Pursh, l. c.*, not of *Willd.* E. spathulatum, *H. H. Eaton, in trans. med. soc. New York,* 1822. E. Philadelphicum, *Bart. veg. mat. med. t.* 20. Doronicum ramosum, *Walt. Car. p.* 205. Phalacroloma obtusifolium, *Cass. in dict. l. c.; DC. prodr.* 5. *p.* 298, excl. all the syn. Stenactis ambigua, *DC.! prodr.* 5. *p.* 299.

β. stem and leaves nearly glabrous; the latter almost constantly entire, except the lowest.—E. integrifolium, *Bigel. fl. Bost. ed.* 2. *p.* 302.

γ. slender; heads rather smaller; rays rose-color, turning nearly white. —E. Beyrichii, *Hort. Berol.!* Stenactis Beyrichii, *Fisch. & Meyer, 5th ind. sem. St. Petersb.* Phalacroloma Beyrichii, *Fisch. & Meyer. 6th ind. sem. l. c., & in Linnæa,* 14. *suppl. p.* 162. (Carolina, *Beyrich.* v. sp. in *hort. Berol.*)

Fields and open places, Canada! and from the Saskatchawan! to Florida! and Louisiana! and west to Oregon! June–Aug., or in the Southern States, April–June.—① or ②? Stem 1–3 feet high, usually much smaller and more slender than the preceding, angled or furrowed. Corymbs loose, at length rather naked. Rays white; the tube hairy. Achenia slightly hairy. Inner pappus in the disk, of about 15 slender fragile and deciduous bristles; in the ray none, or sometimes of one or two caducous bristles: the exterior a small setaceous-squamellate crown, similar in the ray and disk.—The plant infests cultivated fields and meadows, like the preceding, and is also called *Flea-bane* and *Daisy*.

§ 5. *Rays in a single series, rather few* (*about* 30), *longer than the involucre: pappus simple: achenia mostly* 4-*nerved*: *perennial, scapiform.*—Erigeridium.

29. *E. vernum:* nearly glabrous; radical leaves rosulate, slightly succulent, spatulate or oval, mostly petioled, obscurely toothed or entire; the cauline very few and small, or none; heads several (5–12), small, paniculate-cymose; rays narrowly spatulate-linear; scales of the involucre lanceolate, with scarious margins, slightly pubescent.—E. nudicaule, *Michx.! fl.* 2. *p.*

124; *Pursh! fl.* 2. *p.* 533; *Nutt.! gen.* 2. *p.* 147; *Ell. sk.* 2. *p.* 393. Aster vernus, *Linn.! spec.* 2. *p.* 876 (*pl. Gronov.!*); *Pers. l. c.* Doronicum lævifolium, *Walt. Car. p.* 205? Stenactis verna, *Nees, Ast. p.* 275; *DC.! prodr.* 5. *p.* 299.

Moist pine barrens, &c. Virginia! and N. Carolina! to Florida! and Louisiana! May–June.—Leaves variable in form, sometimes short and roundish, often narrowly spatulate, with a more or less elongated tapering base. Scape 1–2 feet high, slender, a little pubescent or hairy above, often simple, and with few heads; not unfrequently once or twice dichotomous, the branches bearing commonly 3 heads. Rays white (sometimes purple, *DC.*), rather broad for their length in this genus, spreading, exserted the length of the involucre. Appendages of the style, in the disk-flowers, short, triangular, often acute. Pappus (double according to Nuttall, Nees and De Candolle) in all our specimens certainly simple and in a single series; the bristles very slender, scabrous, equal, between 20 and 30 in number. Achenia oblong, 4-nerved, quadrangular or compressed, minutely hispid.

§ 6. *Rays* (30–50) *in a single series or nearly so, much longer than the involucre: pappus double; the exterior short, setaceous or squamellate-subulate: achenia mostly 2-nerved: receptacle areolate: perennial or suffruticose, with the habit of* Diplopappus *or* Chrysopsis, *but with the style and receptacle of* Erigeron.—**PSEUDERIGERON.**

30. *E. filifolium* (Nutt.): canescent, stems or branches numerous from a woody base; leaves filiform, crowded on the sterile branches, scattered on the fertile; peduncles naked, bearing single (small) heads; scales of the involucre somewhat unequal, linear-subulate; rays (white) rather few, about twice the length of the disk; achenia somewhat hairy; exterior pappus very indistinct.

α. branches elongated, nearly simple; rays about 40.—Diplopappus filifolius, *Hook.! fl. Bor.-Am.* 2. *p.* 21.

β. stems or branches paniculate-corymbose; rays 25–30.—E. filifolium, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 308. Chrysopsis canescens, *DC.! prodr.* 5. *p.* 328.

Oregon, from the Great Falls and barren grounds of the interior, *Douglas!* to the Rocky Mountains, *Nuttall!*—Stems 8–12 inches high; the sterile branches and young leaves very canescent. Leaves 2–3 inches long, very slender. Scales of the involucre rather rigid. Pappus a single series of white bristles (20 or more), with a few minute setæ intermixed, scarcely distinguishable from the hairs of the compressed 2-nerved achenia.

31. *E. Douglasii:* stem tall, glabrous, racemosely branched at the summit; the branches numerous, elongated, mostly simple and bearing solitary heads, somewhat corymbose or fastigiate; leaves (upper cauline) linear, rigid, obtuse, scabrous with minute appressed hairs; those of the branches much smaller; rays (blue or purple) about twice the length of the disk; scales of the somewhat imbricated involucre minutely pubescent, the exterior linear-subulate; the inner larger, lanceolate; achenia somewhat hairy; exterior pappus minute and indistinct.—Diplopappus? occidentalis, *Hook. & Arn.! bot. Beechey, suppl. p.* 350.

California, *Douglas!*—The original, and only specimen we have seen is imperfect, wanting the lower part of the stem, which appears to have been 2 feet or more in length: the numerous and mostly simple flexuous flowering branches are about 6 inches long: the only cauline leaves present about an inch long, 2 lines or more in breadth, 1-nerved, and slightly veiny. Heads scarcely larger than in E. Philadelphicum. Scales of the involucre narrow and acute, not very numerous, but somewhat in 3 series, rather unequal; the inner whitish, with a brownish mid-nerve, nearly glabrous. Inner pappus of few (15–20) bristles; the exterior fewer and very small.

32. *E. decumbens* (Nutt.): scabrous-pubescent; stems slender, decumbent or ascending, glabrous at the base, leafy, numerous from the same root, somewhat branched or corymbose at the summit; the branches bearing single heads; leaves linear, entire, acute; the lower somewhat lanceolate, tapering into a petiole; rays (white, *Nutt.*) more than twice the length of the linear hairy and rather loose scales of the involucre; exterior pappus minute.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 309.

Rocky Mountains towards the Oregon, *Nuttall!* Wahlamet, *Douglas!*—Stems more slender than in E. corymbosum, 10–15 inches long; the whole plant scabrous-pubescent, not hoary, leafy nearly to the summit. Leaves 2–3 inches long, often less than 2 lines wide; the lower attenuated into slender petioles. Heads as large as a Daisy, on slender peduncles. Scales of the involucre narrow, acute, nearly in a single series. Rays 40–50, in a single series. 1774 Glabrous, but narrow leaved.

33. *E. corymbosum* (Nutt.): canescently pubescent throughout; stems numerous from the same root, erect, bearing few (3–5) corymbose heads at the summit; leaves lanceolate-linear, entire, acute, sessile; the radical lanceolate or slightly spatulate, tapering into a petiole; rays (blue) about twice the length of the lanceolate canescent appressed scales of the involucre; achenia minutely hairy; exterior pappus squamellate-setaceous, very distinct.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 308.

Rocky Mountains, in about lat. 42°, towards Oregon, *Nuttall!*—Plant 6–8 inches high, rather stout, hoary with a close and short pubescence. Leaves rather rigid, strongly 1-nerved, 1–3 inches long, about 2 lines wide. Heads middle-sized, on naked peduncles. Scales of the involucre in about 2 nearly equal series, appressed, hirsute-canescent. Rays 30 or more, in a single series. Pappus somewhat brownish; the exterior rather copious, shorter than the 2–3-nerved compressed achenia.—Habit of Chrysopsis, and with a similar exterior pappus.

34. *E. ochroleucum* (Nutt.): somewhat cæspitose, low; stems numerous from a thickened caudex, simple, slender, naked above, pubescent with appressed hairs; bearing solitary or rarely 3–5 heads; radical leaves crowded, very narrowly linear, tapering into a petiole; the cauline few or scattered, sessile; rays (ochroleucous, *Nutt.*) scarcely twice the length of the pubescent-tomentose linear-lanceolate scales of the involucre; achenia somewhat pubescent; exterior pappus squamellate-subulate, very distinct.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 309. Diplopappus linearis, *Hook. fl. Bor.-Am.* 2. *p.* 21. (ex descr.) Chrysopsis hirtella, *DC. prodr.* 5. *p.* 327?

Plains of the Oregon, *Nuttall!* On dry rocks and sandy grounds near 'Priest's Rapid,' and on Lewis River, *Douglas!* Aug.—Stems 3–5 inches high, often simple and scape-like, leafless above and bearing a single head; frequently more leafy and bearing 3 or 4 heads on naked peduncles. Leaves clustered at the base, slender, 2–3 inches long, rather rigid, slightly dilated upwards or near the apex, or somewhat spatulate-linear, half a line to scarcely a line in width, resembling an Armeria, nearly glabrous when old, at first clothed with slender appressed hairs: cauline leaves nearly similar, but sessile, often almost filiform. Heads as large as in E. alpinum. Scales of the involucre nearly equal and somewhat in a double series. Rays 50 or more, in a single series. Inner pappus of few bristles.—This is without much doubt the Diplopappus linearis of Hooker, and the Chrysopsis hirtella of De Candolle (described from imperfect specimens): having yellowish-white rays (according to Nuttall,) it certainly closely approaches Chrysopsis. The style, receptacle &c. agree with Erigeron.

35. *E. cæspitosum* (Nutt.): dwarf, canescent with a close and short pubescence; stems numerous from a thickened caudex, cæspitose, decumbent, mostly simple and terminated by single heads; leaves linear-oblong, rather obtuse, entire; the cauline sessile; the radical clustered, oblanceolate or spatulate-oblong; rays (white or pale rose-color), very numerous and somewhat in a double series, twice the length of the hirsute-tomentose involucre; achenia hairy; exterior pappus squamellate-setaceous, very distinct.—*Nutt.!* *in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 307. [illegible] 30 [illegible]

β. grandiflorum: larger; stems occasionally somewhat branched; rays more than twice the length of the involucre.—Diplopappus grandiflorus, *Hook.! fl. Bor.-Am.* 2. *p.* 21. = 502 Geyer, but [illegible] hairy

Dry hills of the Platte, in the Rocky Mountains, and on the Colorado of the West, *Nuttall!* *β.* Plains of the Saskatchawan and prairies of the Rocky Mountains, *Drummond!*—Stems 3–5, or in *β.* often 6–8 inches high. Radical leaves in dense clusters, about 2 inches long, or in *β.* larger, obscurely 3-nerved; the cauline ½–1 inch long, obtuse or abruptly acute. Scales of the involucre appressed, narrow, very acute, the exterior shorter, the interior broader.—The head is about as large as a Daisy in Mr. Nuttall's plant: in the specimens of Drummond, the heads, as well as the whole plant, are larger, and the rays longer. Mr. Nuttall has overlooked the exterior pappus; the squamellate setæ of which, although not numerous, are as large and distinct as in any species of this section.

‡ *Species unknown to us.*

36. *E.* (Pseuderigeron) *canescens*: canescently pubescent; leaves linear-lanceolate, entire, very much narrowed at the base; the lower on long petioles; stem simple, corymbose; the branches elongated, leafy, bearing single heads; scales of the involucre narrow, very acute, hirsute-scabrous. *Hook.*—Diplopappus canescens, *Hook. fl. Bor.-Am.* 2. *p.* 21.

Saskatchawan, between Carlton House and Edmonton House, *Drummond!*—According to Hooker, this plant may possibly prove to be a variety of his Diplopappus grandiflorus, which is a large variety of E. cæspitosum, *Nutt.*; but it is said to be a taller, more erect, and corymbose plant, with smaller heads.

37. *E. lonchophyllum* (Hook.): stem tall, simple, hispid; leaves very long, linear, glabrous, nerved, ciliate; the lower ones linear-spatulate; raceme terminal, leafy, many-flowered; peduncles elongated, somewhat leafy (foliolosis); rays numerous, narrow (white?), scarcely longer than the copious pappus. *Hook. fl. Bor.-Am.* 2. *p.* 18.

Saskatchawan, *Drummond.*—Apparently a remarkable species, founded on a single specimen, said to be about 2 feet high, very hispid with spreading and rigid white hairs; the cauline leaves several of them 6 inches long and 2–4 lines broad; the heads similar to those of E. glabellum: but in the specific character the rays are said to be scarcely longer than the pappus.

38. *E. hispidum* (Nutt.): stem erect, corymbose, above scabrous and hispid; leaves entire, ciliate and scabrous on the margin; the radical spatulate; cauline sessile, acuminate; peduncles elongated, one-flowered; scales of the involucre hoary, hispid, very hirsute, much acuminated; rays very numerous. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 310, not of *DC.*

"St. Barbara, California.—Nearly allied to E. speciosum, from which, however, it is very distinguishable by its exceedingly hirsute involucrum, and hispid, naked, elongated peduncles; the leaves appear, also, broader, and scabrous towards the points. Rays blue, more numerous than in E. speciosum, and not so long. Pappus double in ray and disk; rays [bristles] 20 to 24, persistent." *Nutt.*—We have not seen this plant. There is probably a typographical error in the character; the word 'hispid' should probably be applied to the peduncles, instead of the involucre. There is already an Erigeron hispidum of De Candolle (in *Wight, contrib. bot. Ind.*, & *DC. prodr.*); but we have left the name of Mr. Nuttall's species unchanged; firstly, because that of De Candolle will perhaps be removed from the genus; and secondly, we see no adequate distinction between this plant and E. speciosum.

39. *E. occidentale* (Nutt.): hispid with a short pubescence; corymb compound, irregular; lower leaves oblong-lanceolate, obtuse, subserrulate; upper linear, entire, scales of the involucre lanceolate, acute, scarcely hirsute; rays very numerous, red; inner pappus of about 12 bristles; the outer very distinct. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) *p.* 311.

"Oregon.—A low perennial species, with broadish leaves on the lower part of the stem. Allied to E. strigosum, but scarcely the same, with red flowers and broad leaves." *Nuttall.*

40. *E. foliosum* (Nutt.): rather hirsute and somewhat scabrous; stem simple, erect, terete, attenuated, the summit corymbose; leaves oblong-linear, sessile, acute, crowded; scales of the involucre lanceolate, pubescent, acute, in about 2 series, nearly equal; rays short, red, about 30; achenia somewhat hirsute. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 309.

St. Barbara, California, *Nuttall.* May.—"A very remarkable species; the stem terete, full of leaves, one and a half to two inches long, and about 2 lines wide, diminishing in size with the attenuation of the stem. Pappus double; the outer small, the inner of many brownish rays. Stigma exserted, smooth and nearly equally filiform in the ray; obliquely truncate and slightly pubescent in the discal florets. Rays narrow, about the length of the involucrum [that is exserted to about that length], of a full purple red. This species appears to be considerably allied to Corethrogyne, but has the achenium of Erigeron, somewhat prismatic, with 3 or 4 longitudinal brown lines or nerves, but the obtuse stigma appears to be an anomaly in the genus." *Nutt.*—We have not seen this plant, which, in addition, is said to resemble an Aster in aspect, and to have been described from immature specimens. The appendages of the style (stigmas) are, we believe, always obtuse in Erigeron. [illegible]

E. Carolinianum, of Linnæus, is wholly founded on the Virga-aurea Caroliniana, &c. *Dill. Elth. t.* 306, *f.* 394, a yellow-flowered plant, which no botanist has succeeded in identifying. It has nothing in common with the Phalacroloma obtusifolium of Cassini (which is Erigeron strigosum), nor with the Erigeron hyssopifolium, *Michx.* (which is Aster graminifolius). This confusion commenced with Pursh, who erroneously adduced the figure of Dillenius and the E. Carolinianum as synonyms of the E. hyssopifolium of Michaux.

E. longifolium (Desf. & Pers.) is pretty clearly not of this genus, and in all probability not a North American plant. Pursh adds the mark *v. s.*, but we find no specimen in Mr. Lambert's herbarium. In the list of excluded species, De Candolle refers it to Jasonia longifolia, but we find no such species described, nor have we elsewhere met with the name.

E. retroflexum (Poir.), a very imperfectly characterized species, is said to have extremely narrow linear glabrous leaves, and a short, imbricated, and very glabrous involucre. Perhaps it is Chrysopsis pinifolia, *Ell.*

23. DIPLOPAPPUS. *Cass. in bull. philom.* 1817, & *in dict.* 13. *p.* 308.

Diplostephium, *Kunth.*—Diplopappus & Diplostephium. *Cass.* (*dict.* 37.) & *DC.* (excl. Diplop. § 1? & 2.)—Diplostephium & Dœllingeria, in part, *Nees.*—Chrysopsis § 2, *Nutt.* partly.

Heads many-flowered; the ray-flowers 8–12, or rarely more numerous, in a single series; those of the disk tubular, perfect. Scales of the involucre imbricated, lanceolate or subulate, 1-nerved or carinate, destitute of herbaceous or squarrose tips. Receptacle flat, somewhat alveolate; the alveoli toothed. Appendages of the style subulate or lanceolate, rarely short. Achenia more or less compressed. Pappus double; the exterior of copious scabrous often unequal capillary bristles, as long as the corolla; the exterior very short, setulose, or setaceous-subulate.—Perennial (chiefly American) herbs or suffruticose plants, somewhat variable in habit; with alternate mostly entire and sessile leaves. Heads corymbose, or terminating the simple branches. Rays blue, purple, or white; the corolla of the disk yellow, rarely changing to purplish.

The name Diplostephium appertains to the section which comprises the original species, D. lavandulæfolium, *Kunth;* which appears to differ considerably, and perhaps generically from the Eudiplostephium of De Candolle, and is perhaps much nearer the Diplopappus § Amelloidei of the latter author.—In a note under Aster § Orthomeris, we have already observed that some, if not all of the species of De Candolle's Diplopappus § Calimeridei, with the Aster peduncularis, *Wall.* (Amphiraphis peduncularis, *DC.*), the Calimeris flexuosa, *Lindl.* &c. (all natives of the mountains of India), appear to form a well-marked genus.

§ 1. *Bristles of the inner pappus similar, not clavellate or thickened at the apex; the exterior setulose: achenia villous or silky, short, somewhat compressed: involucre about the length of the disk: leaves crowded, linear, rigid,* 1-*nerved, mucronulate, with serrulate-ciliate very scabrous margins: heads terminating the simple branches: rays violet.*—IANTHE. (Diplostephium § Amelloidea, *Nees.* Diplopappus § Amelloidei, *DC.*)

1. *D. linariifolius* (Hook.): stems strict, puberulent or slightly scabrous, usually several from the same root or suffrutescent base; leaves rigid, mostly spreading, linear, mucronulate, strongly 1-nerved, glabrous, with very scabrous serrulate-ciliate margins; scales of the turbinate-campanulate involucre imbricated in several series, rigid, carinately 1-nerved, at length somewhat spreading; the exterior short, lanceolate-subulate; the innermost linear, mostly obtuse; exterior pappus copious, setaceous; achenia narrow, silky-villous.—*Hook.! fl. Bor.-Am.* 2. *p.* 21; *Darlingt.! fl. Cest. p.* 473. D. linariifolius & D. rigidus, *Lindl.! in DC. prodr.* 5. *p.* 277. Diplostephium linariifolium, *Nees, Ast. p.* 199. Chrysopsis linariifolia, *Nutt.! gen.* 2. *p.* 152. Aster linariifolius, *Linn.! spec.* 2. *p.* 874; *Michx.! fl.* 2. *p.* 110; *Pursh, fl.* 2. *p.* 545; *Ell.! sk.* 2. *p.* 365. A. rigidus, *Linn. l. c.* (fide pl. *Gronov.!*); *Michx.! l. c.; Pursh! fl.* 2. *p.* 544. (excl. syn. A. nemoralis, *Willd.*) A. pulcherrimus, *Lodd. bot. cab.* 1. *t.* 6. A. Americanus frutescens, &c. *Pluk. alm. t.* 14, *f.* 7.

Dry soil, throughout the United States! also in Canada! and Newfoundland, *Mr. Cormack!* (in *herb. Hook.*) Sept.–Oct.—Stems 8–20 inches high, simple and terminated by a single head; or with few or numerous, simple, leafy, corymbose, clustered, or somewhat racemose branches. Leaves near the root short and scale-like, appressed, obtuse, 1–3-nerved, rigidly ciliate; the other cauline ones about an inch long, very numerous, mostly spreading or recurved, shining above, pale and with the midrib prominent beneath, veinless; those of the somewhat hoary branches much smaller, the uppermost subulate. Heads rather large; the numerous scales of the involucre somewhat ciliate; the inner often with purplish tips. Rays 10–12, elongated, showy. Appendages of the style attenuate-subulate, hairy.—We know not how the D. rigidus, *Lindl.* &c. is to be distinguished, even as a variety. The involucre, at first more or less turbinate, becomes somewhat hemispherical when old.

2. *D. ericoides:* strigosely canescent; stems branching from near the suffrutescent? base; leaves acerose-subulate, imbricated, mucronate-piliferous; scales of the involucre lanceolate-linear, acute, 1-nerved, with scarious margins, loosely imbricated in about 3 series; exterior pappus very minute; young achenia pubescent.—Inula? ericoides, *Torr.! in ann. lyc. New York,* 2. *p.* 212. Chrysopsis ericoides, *Eaton, man. bot.* Eucephalus ericoides, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 299.

'On the Canadian River? *Dr. James!* (collected in Long's expedition to the Rocky Mountains.)—Plant apparently 6–8 inches high, clothed quite to the summit of the branches with appressed strigose and hispidly-ciliate heath-like leaves; those near the base 2 or more lines long; those of the branches scarcely a line long, thickened, concavo-convex, obscurely 1-nerved. Heads solitary, rather small. Scales of the involucre rather few. Rays 10–15, longer than the disk, apparently not yellow; the disk-flowers about 12. Appendages of the style oblong, much shorter than the stigmatic portion. Pappus of rather few capillary bristles; the exterior of about as many in proportion to the inner as in D. linariifolius.

3. *D. alpinus* (Nutt.): stems several from the suffrutescent base, simple, tomentose-pubescent, naked at the summit; leaves crowded, erect, linear-oblong, mucronulate, rather rigid, scabrous, villous-pubescent when young, 1-nerved, flat, with cartilaginous minutely serrulate-scabrous margins; scales of the hemispherical involucre linear, acute, 1-nerved, with scarious margins, pubescent, imbricated in about 3 series; exterior pappus of rather numerous setaceous bristles; young achenia compressed, silky-villous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 304. Chrysopsis alpina, *Nutt.! in jour. acad. Philad.* 7. *p.* 34, *t.* 3, *f.* 2.

Rocky Mountains, near the Flat Head River, *Mr. Wyeth!* June.—Plant 3–4 inches high. Leaves about 4 lines long and one in breadth. Heads as large as in D. linariifolius; the rays "pale violet-purple," 12–15, elongated. Appendages of the style subulate-linear, as long as the stigmatic portion.

D. n. sp. aff. no. 3, but leaves of no. 1, Oregon. Burke! Hb. Hook.

§ 2. *Bristles of the inner pappus unequal, some of them* (*the innermost*) *clavellate or slightly thickened at the summit; the exterior of copious short slightly squamellate bristles: achenia* (*pubescent or glabrous*) *obovoid, more or less compressed, 5–8-nerved: involucre shorter than the disk: leaves scattered, membranaceous, veiny, entire: heads in compound corymbs: corolla of the disk deeply 5-toothed: rays 8–12, white, or somewhat ochroleucous.*—TRIPLOPAPPUS. (Species of Dœllingeria, *Nees.* Diplostephium § 1. Eudiplostephium, *DC.*)

* *The longer bristles of the inner pappus with manifestly clavellate tips: appendages of the style linear-subulate, elongated.*

4. *D. cornifolius* (Darlingt.): stem slender, terete, pubescent-scabrous above, sparingly corymbose-paniculate at the summit; leaves elliptical, or broadly lanceolate, conspicuously acuminate at each end, ciliate, hairy on the veins beneath; heads few, scarcely corymbose, on divaricate pedicels; achenia glabrous.—*Darlingt.! fl. Cest. p.* 475. Dœllingeria cornifolia, *Nees, Ast. p.* 181. Diplostephium cornifolium, *DC.! prodr.* 5. *p.* 273. Aster Americanus latifolius albus, &c. *Pluk.! alm. p.* 56, *t.* 79, *f.* 1. A. caule infirmo, foliis ovatis, &c. *Gronov.! Virg. ed.* 1. *p.* 99. A. divaricatus, *Linn.! spec.* 2. *p.* 873 (ex syn. *Pluk. & Gronov.* supr. cit.); not of *herb. Linn.*; *Spreng. syst.* 3. *p.* 529? A. cornifolius, *Muhl. in Willd. spec.* 3.

p. 2039; *Bigel. fl. Bost. ed.* 2. *p*. 313. A. infirmus, *Michx.! fl.* 2. *p*. 109. A. humilis, *Pursh, fl.* 2. *p*. 548 (excl. syn. *Willd.*); *Ell. sk.* 2. *p*. 366. Chrysopsis humilis, *Nutt. gen.* 2. *p*. 153?

Woodlands &c. from (Canada, *Michaux*,) Massachusetts, New York! and Pennsylvania! to Virginia! and the mountains and upper country of the Southern States! Aug.–Sept.—Stem 1–2 feet high, sometimes flexuous. Leaves somewhat rhombic-oblong or oval (the uppermost oblong-lanceolate), tapering to the base and almost petioled, 2–4 inches long, 1–2 wide. Heads larger and much fewer than in the following, 2–5 on the somewhat paniculate branches; or very loosely corymbose at the summit. Scales of the involucre oblong-lanceolate, obtuse, slightly pubescent; the innermost shorter than the disk, the exterior very short. Achenia large, obovoid, fuscous, turgid, but evidently compressed, 7–8-nerved, viz: with one nerve on each margin, and 3 on one side and 2 or 3 on the other. Pappus reddish-brown; the exterior very copious; a large portion of the interior clavellate and obtuse.—A very distinct species.

* * *The longer bristles of the inner pappus slightly thickened towards the summit (under a lens), but scarcely clavellate: appendages of the style short, triangular-subulate or oblong.*

5. *D. amygdalinus:* stem slightly striate, smooth, or scabrous above, corymbosely branched at the summit; leaves ovate-lanceolate, oblong, or sometimes oval, more or less acute or acuminate, scabrous-ciliolate, sessile, or abruptly narrowed into a slight petiole; heads numerous, in loose corymbs; scales of the short involucre loosely imbricated, obtuse; achenia minutely hairy.—Aster amygdalinus, *Lam. dict.* 1. *p*. 305? (excl. syn. Ast. Acadiensis, &c. *Tourn. herb.*); *Ell.! l. c.* (partly.) A. humilis, *Willd. spec.* 3. *p*. 2038, *& hort. Berol. t.* 67, fide *Nees*. Chrysopsis amygdalina, *Nutt. l. c.?* Diplostephium amygdalinum, *Cass. in dict. sci. nat.* 37. *p*. 486? Dœllingeria amygdalina, *Nees, Ast. p.* 179.

β. stem branching; heads rather large.—D. cornifolius, *Lindl.! in herb. Torr.* (partly.)

γ. more scabrous and rigid; heads smaller.—Dœllingeria cornifolia, *Lindl.! in Hook.! compan. to bot. mag.* 1. *p*. 98.

Moist places, New Jersey! Pennsylvania? and throughout the Southern States! *β*. Alabama, *Dr. Gates!* Louisiana, *Dr. Hale!* Arkansas, *Dr. Pitcher!* *γ*. Louisiana, *Drummond! Dr. Leavenworth!* Aug.–Sept.—Stem 1–3 feet high, often producing straggling branches. Leaves shorter and broader than in the following, sometimes ovate or oval and obtuse, but usually acute or acuminate. Scales of the involucre scarcely longer than the mature achenia, nearly glabrous. Achenia and pappus nearly as in D. umbellatus. —Both this and the following species are subject to considerable variation, and perhaps are not always readily discriminated, but we think they are distinct. This species is nearly confined to the southern portion of the United States, while the following abounds in the Northern States and Canada. They are not satisfactorily distinguished by those who recognize two species, and a portion of the synonymy is very uncertain. Perhaps the original A. amygdalinus, as well as A. umbellatus, was founded on the present species (as is certainly the case with the plant cited from Tournefort's herbarium), although Lamarck's plant is said to have been derived from Virginia.

6. *D. umbellatus:* stem striate, smooth or somewhat scabrous, fastigiate-corymbose at the summit; leaves elongated lanceolate, attenuate-acuminate, tapering at the base usually into a slight petiole, the margins ciliate-scabrous; heads numerous, usually in fastigiate corymbs; scales of the short involucre obtusish, rather closely imbricated; achenia minutely hairy.—D. umbellatus

& D. amygdalinus, *Hook.! fl. Bor.-Am.* 2. *p.* 23. D. amygdalinus, *Darlingt.! fl. Cest. p.* 473. Dœllingeria umbellata, *Nees, Ast. p.* 178. Diplostephium umbellatum, *DC. l. c.* Aster umbellatus, "*Mill. dict. ed.* 7. *no.* 2"; *Ait.! Kew.* (*ed.* 1) 3. *p.* 199; *Willd. spec.* 3. *p.* 2030; "*Hoffm. phytogr. bl. p.* 74, *t. B. f.* 2." (ex *Nees.*); *Bigel. fl. Bost. ed.* 2. *p.* 310. A. amygdalinus, *Michx.! fl.* 2. *p.* 109; *Pursh, fl.* 2. *p.* 549; *Ell. l. c.* (partly); *Torr.! compend. p.* 300; *Lindl. bot. reg. t.* 1517.

β. low and small; corymb simple.—Diplostephium amygdalinum, β. humilius, *DC.! l. c.*

Moist thickets, &c. Canada! and Nova Scotia! and common throughout the Northern and North Western States! to the mountains of South Carolina. β. Newfoundland, *Pylaie! Mr. Morrison! &c.* Aug,–Sept.—Stem 2–5 feet high, simple below, above with rather strict corymbose branches. Leaves 3 to 4 or 5 inches long, either narrowly lanceolate or oblong-lanceolate, glabrous, pale beneath. Scales of the involucre (not longer than the ripe achenia) slightly pubescent and ciliate. Achenia obovoid oblong, somewhat compressed, 3–5-nerved or ribbed. Pappus pale or tawny.

7. *D. obovatus:* clothed with a minute short pubescence: stem terete, corymbose at the summit; leaves closely sessile, oval, elliptical, or occasionally somewhat obovate, mostly obtuse at each end, conspicuously reticulated, tomentose-pubescent beneath; heads rather numerous; scales of the involucre, linear, acute, pubescent and viscid, imbricated in about 3 series; achenia pubescent-villous.—Chrysopsis obovata, *Nutt.! gen.* 2. *p.* 152. Solidago Noveboracensis, *Muhl.! herb.* Aster obovatus, *Ell. sk.* 2. *p.* 368. Diplostephium boreale, *Spreng. syst.* 3. *p.* 544. D. obovatum, *DC. prodr.* 5. *p.* 273. Dœllingeria obovata, *Nees, Ast. p.* 182.

β. corymb dichotomous-paniculate; peduncles elongated, naked; heads fewer.—Aster dichotomus, *Ell.! sk.* 2. *p.* 366. Diplostephium dichotomum, *DC. l. c.*

Damp shady soil, S. Carolina and Georgia, *Le Conte! Nuttall! Elliott!* to Florida, *Dr. Chapman! Dr. Leavenworth!* June–Oct.—Stem 2–3 feet high, often numerous from the same root. Leaves numerous, 2–3 inches long, an inch or more wide, somewhat membranaceous, often a little narrowed towards the base, slightly puberulent-scabrous above; the veins diverging at right angles from the midrib, and conspicuously reticulated beneath. Heads as large as in D. cornifolius, either loosely corymbose, or somewhat paniculate, usually on slender tomentose-pubescent peduncles. Involucre shorter than the disk, at length scarcely exceeding the slender achenia. Rays 10–13, white (sometimes tinged with purple), nearly thrice the length of the involucre. Achenia oblong, about 5-angled or nerved, scarcely compressed. Pappus white, or at length tawny; the exterior not very copious; the interior very obscurely, if at all, thickened towards the summit.—The plant is sometimes considerably branched; and, according to Elliott, the leaves are rarely toothed. We have met with no specimen in Elliott's herbarium under the name of Aster obovatus; but his A. dichotomus is a mere state of this species.

‡ *Doubtful Species.*

8. *D. leucophyllus* (Lindl.): shrubby? woolly throughout; branches short, bearing single heads; leaves thick, oval, acute, crenate, narrowed into a petiole; scales of the squamose involucre linear, membranaceous, the upper ones naked; achenia tomentose, fusiform; exterior pappus short; the inner very unequal, subulate. *Lindl. in DC. prodr.* 5. *p.* 278.

California.—Probably collected by Douglas, but this is not mentioned. We have ventured to adduce this species as a synonym of Corethrogyne filaginifolia; with which, however, the character does not altogether accord.

29. TOWNSENDIA. *Hook. fl. Bor.-Am.* 2. *p.* 16, *t.* 119.

Heads subglobose, many-flowered; the ray-flowers numerous in a single series, pistillate, but sometimes infertile; those of the disk tubular, perfect. Scales of the involucre numerous and closely imbricated, appressed, lanceolate, with scarious margins. Receptacle flat, naked, areolate-fimbrillate. Rays linear, often erect; the corolla of the disk infundibuliform, 5-toothed. Branches of the style lanceolate, rather acute, hairy towards the summit. Achenia of the disk flat, obovate-oblong, pubescent or hairy, the margins 1-nerved; those of the ray 3-nerved. Pappus of the disk-flowers composed of numerous rather rigid and uniform barbellate-scabrous bristles, as long as the corolla (slightly cohering at the base? persistent); that of the ray of fewer short subulate bristles or squamellæ, sometimes with one or two slender bristles intermixed.—Dwarf acaulescent or subcaulescent herbs (natives of the Rocky Mountains and the banks of the rivers which rise on their eastern slope); with a branching caudex or a perpendicular root, and crowded linear or spatulate entire leaves. Heads large for the size of the plant, sessile or nearly so at the summit of the caudex, or of the proliferous branches. Rays rose-color or nearly white.

§ 1. *Root perennial; the caudex somewhat ligneous: rays fertile; the short pappus squamellate-subulate, and mostly with one or two capillary bristles resembling those of the disk.*—TOWNSENDIA proper.

1. *T. sericea* (Hook.! l. c.): stemless; leaves spatulate-linear, silky-canescent, erect, surrounding and partly concealing the sessile heads; scales of the involucre subulate-lanceolate; rays long and narrow, with the margins involute; receptacle areolate; achenia hairy; pappus of the ray composed of several unequal subulate bristles much shorter than the achenium, and one or two long ones nearly resembling those of the disk-flowers.—Aster? exscapus, *Richards.! appx. Frank. journ. ed.* 2. *p.* 32.

β. heads and flowers smaller; leaves narrower.—T. sericea, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 304. [illegible]

Carlton House on the Saskatchawan, *Richardson!* to the Rocky Mountains in about lat. 54°, *Drummond!* *β.* Black hills towards the sources of the Platte in lat. 41°, *Nuttall!* April–May.—Root perpendicular, elongated; the caudex simple or divided, thick, very short; the whole plant not rising more than 2 inches in height. Leaves obscurely 1-nerved, 12–15 lines long, mostly overtopping the sessile heads, which are ordinarily about 8 lines in length. Scales of the involucre pubescent, green in the centre (or purplish towards the tip); the margins scarious and lacerate-ciliate. Rays not spreading. Pappus of the disk white, longer than the corolla; the bristles somewhat unequal, in about 2 rows; the exterior thickened towards the base, the interior more slender. Hairs of the achenium minutely capitate.—The flower-bud, according to Dr. Richardson, is formed in the autumn and expands the following spring.

2. *T. incana* (Nutt.): caudex, or rather stems, branching; leaves silky-canescent, oblong-spatulate, tapering into a petiole, crowded, surrounding the (small) sessile heads; scales of the involucre oval-oblong, rather acute; rays linear, flat; receptacle somewhat alveolate-fimbrillate; achenia minutely

hairy; pappus of the ray composed of nearly equal subulate setaceous bristles, shorter than the achenium.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 305.

Near the sources of the Platte in the Rocky Mountains, *Nuttall!*—Plant about 2 inches high, densely cæspitose and depressed, inclined to produce dichotomous stems. Leaves about half an inch long, indistinctly petioled. Heads smaller than in T. sericea. Scales of the involucre silky-pubescent, with broad scarious and conspicuously fimbriate-ciliate margins. Rays not twice the length of the disk, pale lilac; the pappus resembling that of the disk, but shorter.

§ 2. *Root perennial: pappus deciduous in a ring; that of the scarcely exserted fertile rays equalling that of the disk.*—UROPHORUS, Nutt.

3. *T. spathulata* (Nutt.! l. c.): densely cæspitose; caudex branched; leaves spatulate or obovate, silky-villous, narrowed into a petiole as long as the limb, crowded, and nearly enclosing the (small) sessile heads; scales of the involucre lanceolate, acute, scarious; receptacle somewhat alveolate.

On the Black Hills of the Platte, with the preceding, *Nuttall!*—Plant 1–3 inches high. "Achenia oblanceolate, margined, slightly pubescent on the disk, and usually naked by the escape of the deciduous (barbellate) pappus, which is not the case in any of the preceding. Though the habit is nearly similar, the present plant probably constitutes an allied genus." *Nutt.*—Our specimens are too old, and have lost their achenia as well as pappus. Perhaps the latter is also deciduous in the other species, when the fruit is fully mature.

§ 3. *Root annual, thickened at the summit, and producing depressed branching stems: rays pistillate but infertile; the short pappus composed of lacerate-denticulate squamellæ, often somewhat united at the base.*—NANASTRUM. (Subgen. Nanodia, *Nutt.*, not of *Banks.*)

4. *T. strigosa* (Nutt.! l. c.): depressed; leaves strigose-canescent, linear-spatulate; the uppermost often involucrate around the base of the slightly pedunculate heads; scales of the involucre lanceolate-oblong, fimbriate-ciliolate; rays 12–14 (rose-color), short; achenia minutely pubescent.

Black Hills, near the banks of the Platte, *Nuttall!* June.—Plant 2–4 inches high. Heads scarcely as large as in T. sericea. Scales of the involucre scarious, except the greenish line in the centre. Pappus of the ray barely visible to the naked eye, composed of a single series of squamellæ, somewhat united or coroniform.

5. *T. grandiflora* (Nutt.! l. c.): divaricately branched from the base; the branches depressed, often proliferous; leaves scattered, linear-lanceolate, acute, minutely pubescent; the uppermost bracteate at the base of the (large) heads; scales of the involucre narrowly lanceolate, subulate-acuminate, with fimbriate-ciliolate margins; rays 25–30, elongated (pale lilac); achenia minutely hairy.

Black Hills, and plains of the Upper Platte, *Nuttall! Dr. James!* June.—Central stems short, erect, bearing a single head; the lateral decumbent, extending 5 to 10 inches along the ground, often branching and bearing 3 or 4 heads. Leaves 1–2 inches long, somewhat succulent; the cauline alternate. "Heads nearly as large as those of the China Aster. The plant well deserves cultivation, from its large showy flowers." *Nuttall.*—The pappus is very similar to that of the preceding species.

30. CHÆTOPAPPA. *DC. prodr.* 5. *p.* 301. (1836.)

Chætanthera, *Nutt.*, not of *Ruiz & Pavon.*—Chætophora, *Nutt. in herb. DC.*, not of *Agardh.*—Diplostelma, *Raf.* (1836.)

Heads about 20-flowered; the ray-flowers 8–12, pistillate, in a single series; those of the disk tubular, perfect; the central mostly infertile or abortive. Scales of the involucre about 12, lanceolate, acute, rigid, with scarious margins, loosely imbricated in 2–3 series, carinately 1-nerved; the outermost shortest. Receptacle narrow, naked. Rays linear-oblong; the corolla of the disk infundibuliform-tubular, 5-lobed. Style somewhat included; the branches short, very obtuse. Achenia nearly terete, somewhat fusiform, 5-striate, slightly hairy. Pappus of the ray and fertile disk-flowers similar, double; the exterior of 1–5 very small hyaline scales; the interior of 5 rigid scabrous bristles nearly the length of the corolla: that of the central mostly infertile flowers simple and similar to the exterior pappus of the fertile flowers, or coroniform, the bristles wanting.—A small annual herb (4–10 inches), diffusely branching from the base, minutely strigose. Leaves alternate, entire; the radical and lowermost obovate-spatulate, tapering into a petiole; the upper linear. Heads terminating the branchlets, solitary or loosely paniculate. Flowers of the ray pale purple or white.

C. asteroides (DC.! l. c.)—Chætanthera asteroides, *Nutt.! in jour. acad. Philad.* 7. *p.* 111. Chætophora asteroides, *Nutt.! in herb. DC.* Asteridium ramosissimum, *Engelmann! mss. in herb. Berol.*

Prairies and naked places, Arkansas, *Nuttall! Dr. Engelmann! Dr. Leavenworth!* to Texas, *Drummond!* March–May.—Heads about the size of those of Erigeron Canadense. Involucre turbinate-campanulate, glabrous. Rays elongated, convolute when dry; the tube slender.—We have described this plant somewhat differently from either Nuttall or De Candolle. The pappus of the ray and of the exterior perfect flowers is absolutely similar in all our specimens; but several of the central flowers, although perfect, are smaller and apparently always infertile; in these the inner pappus is wanting, and the exterior often only rudimentary and coroniform. The plant begins to flower when the stems or branches are about 2 inches high: later in the season it branches very much, and the numerous heads are borne on setaceous divaricate peduncles.

31. BOLTONIA. *L'Her. sert. Angl. p.* 27; *DC. prodr.* 5. *p.* 301.

Heads many-flowered; the ray-flowers pistillate, in a single series; those of the disk tubular, perfect. Scales of the hemispherical involucre imbricated somewhat in 2 series, appressed, scarcely the length of the disk, with somewhat membranaceous margins. Receptacle hemispherical or conical, obscurely alveolate. Branches of the style linear-oblong, with very short appendages. Achenia compressed, flat, obovate or slightly obcordate, margined with a callous wing, in the ray often 3-winged, glabrous or sparsely and minutely hispid. Pappus of several minute setose bristles, and frequently with 2 (or sometimes 3–4) more or less elongated subulate awns.—Perennial glabrous and somewhat glaucescent paniculately branched herbs, with the habit of Aster. Leaves mostly vertical, lanceolate, sessile, entire, or the lower rarely serrate, with scabrous and somewhat cartilaginous margins. Heads rather small, loosely corymbose or paniculate. Rays white or purplish.

1. *B. asteroides* (L'Her. l. c.): achenia broadly oval, glabrous; pappus of 4 or 5 minute setulose teeth, similar in the disk and ray, deciduous; heads loosely corymbose; leaves lanceolate, entire, or the lower obscurely serrate.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 197; *Michx.! fl.* 2. *p.* 132; *Nees, Ast. p.* 236; *DC.! l. c.* Matricaria asteroides, *Linn. mant. p.* 116. Chrysanthemum Carolinianum, *Walt.! Car. p.* 204.

Pennsylvania, *Bartram*, (*Linn.*) and along the mountains to the Southern States!—Heads larger than in B. diffusa, but rather smaller than in B. glastifolia, which it closely resembles, and from which it is distinguished by the minute pappus. This would appear to be a rare species; as we possess only a single specimen, collected in Burke County, N. Carolina, by Mr. M. A. Curtis; and Elliott did not meet with it in the low country of the Southern States.

2. *B. glastifolia* (L'Her. l. c.): achenia obovate, broadly winged, often slightly hairy; pappus of several very short bristles, and (especially in the disk) with 2, or sometimes 3–4, more or less elongated slender awns; heads loosely corymbose; leaves lanceolate, the lowest often serrate.—*Ait.! l. c.*; *Michx.! l. c.*; *Willd. spec.* 3. *p.* 2161; *Sims, bot. mag. t.* 2381; *Ell. sk.* 2. *p.* 399; *Nees, Ast. p.* 235; *Hook. fl. Bor.-Am.* 2. *p.* 23; *DC.! l. c.*

β.? decurrens: leaves elongated lanceolate, rather thin, decurrent on the stem; the broad decurrent portions usually terminated by short and triangular divaricate lobes, thus appearing sagittate.

Swamps and wet places, Upper Canada, Pennsylvania! and nearly throughout the Southern and Western States! *β.* Wet prairies of Illinois, *Dr. Short!*—Plant 3–7 feet high. Leaves 3–5 inches long, tapering to the base, or oblanceolate. But in var. *β.* which is perhaps a distinct species, the leaves are of the same breadth throughout in the only specimen we have seen, those of the branches closely sessile; the cauline (upper) strikingly decurrent.

3. *B. diffusa* (Ell.): achenia obovate, rather narrowly winged; pappus of several very short bristles, and 2 short subulate awns; heads (small) diffusely paniculate; branches and branchlets very numerous and slender; cauline leaves linear-lanceolate, entire; those of the branches small, linear; those of the branchlets subulate.—*Ell. sk.* 2. *p.* 400; *Hook. compan. to bot. mag.* 1. *p.* 97; *DC.! prodr.* 5. *p.* 301. B. asteroides, *Sims, bot. mag. t.* 2554, ex *DC.*

Damp soil, throughout the Southern and Southwestern States from Georgia! to Western Louisiana! common. Aug.–Oct.—Stem 2–7 feet high, very diffusely branched from near the base. Heads not more than half the size of the preceding: the achenia small in proportion; the stout awns not half their length.

Subdiv. 2. BELLIDEÆ, *DC.*—Pappus none, or coroniform and minute.

32. BELLIS. *Linn.; Gærtn. fr. t.* 168; *DC. prodr.* 5. *p.* 304.

Heads many-flowered; the ray-flowers pistillate, in a single series; those of the disk tubular, perfect. Involucre campanulate; the scales somewhat in a double series, foliaceous, herbaceous, or somewhat membranaceous, equal.

Receptacle conical, slightly alveolate. Branches of the style short and broad. Achenia obovate, compressed, slightly hairy or hispid. Pappus none.—Low herbs (natives of Europe, with a single exception), either acaulescent and perennial, or caulescent and annual. Leaves mostly obovate or spatulate. Heads solitary, terminating the scape or branches. Rays violet-purple, rose-color, or white.—*Daisy.*

§ *Annual: stems branched.*—Kyberia, *Neck.*

1. *B. integrifolia* (Michx.): stem diffusely branched; leaves entire, sparsely hairy and ciliate; the radical and lowermost spatulate-obovate, scarcely petioled; the upper lanceolate or oblong, sessile; peduncles elongated; scales of the involucre lanceolate-ovate, acuminate, with membranaceous margins; achenia somewhat scabrous.—*Michx.! fl.* 2. *p.* 131; *Hook.! bot. mag. t.* 3455; *DC.! l. c.* Eclipta integrifolia, *Spreng.*, ex syn. Astranthium integrifolium, *Nutt.! in trans. Amer. phil. soc. l. c.*

Along streams and in prairies, Kentucky! Tennessee! Arkansas! and Texas! March–June.—Stems 4–12 inches high. Heads about as large as the true Daisy (B. perennis); the ray pale purple or violet. Scales of the involucre clothed with scattered hairs, acuminate into a bristly point. Appendages of the style a little longer than in B. annua. Rays pistillate, and apparently always fertile.—This appears to be a true congener of Bellis annua, as Hooker has remarked.

33. APHANOSTEPHUS. *DC. prodr.* 5. *p.* 310.

Heads many-flowered; the ray-flowers pistillate; those of the disk tubular, perfect. Scales of the involucre imbricated in a double series, lanceolate, acute or acuminate, with scarious margins. Receptacle conical, large, naked. Rays linear, twice the length of the involucre; the corolla of the disk tubular, 5-toothed, narrowed at the base. Branches of the style short, flat, terminated by a very short obtuse flattened cone. Achenia terete, obscurely striate, nearly glabrous. Pappus exceedingly minute, coroniform, nearly entire.—Annual? or perennial pubescent and branching (Mexican and Texan) herbs. Leaves alternate, incisely toothed or lobed. Heads solitary, pedunculate, terminating the branchlets. Rays white.

The genus should perhaps be removed to the Subtribe Anthemideæ; as De Candolle has suggested.

1. *A. Riddellii*: perennial; stems branched from the base, erect; radical and lower cauline leaves lanceolate-spatulate or nearly linear, acutely and incisely toothed towards the apex, tapering below into a long and slender petiole; those of the branches narrowly linear, entire, crowded.

Texas, *Dr. Riddell!*—Root ligneous, acrid to the taste. Stems rigid, slender, 6–8 inches high; the flowering branchlets slender, naked towards the summit. Leaves minutely hirsute-pubescent and somewhat canescent. Heads smaller than in Bellis integrifolia, but very similar in appearance. Receptacle nearly the length of the involucre.—From A. ramosissimus, *DC.* this species appears to differ chiefly in its sharply toothed and conspicuously petioled lower leaves (those of the branches more crowded), and in the rather larger flowers; characters which are perhaps inconstant, and not of specific importance.

34. BRACHYCOME. *Cass. dict.* 37. *p.* 464 *&* 491; *DC. prodr.* 5. *p.* 305, *&* 7. *p.* 276; *Benth. enum. pl. Hugel. p.* 59.

Heads many-flowered; the ray-flowers pistillate, in a single series; those of the disk tubular, perfect. Scales of the campanulate or hemispherical involucre in 2–3 series, appressed, with membranaceous margins. Receptacle conical, somewhat alveolate. Achenia compressed, or nearly terete, crowned with an inconspicuous squamellate setulose pappus.—Low herbs, with the habit of the annual species of Bellis; chiefly perennial, and natives of Australia. Rays white.

1. *B. xanthocomoides?* (Less.): diffusely branched from the base; the branches somewhat pubescent with appressed hairs, naked at the summit and bearing solitary heads; leaves nearly glabrous, entire; the lower oblong-spatulate; those of the branches lanceolate-linear, sessile; scales of the involucre oblong-lanceolate, acute, with broad scarious margins.—*Less. syn. p.* 192, *& in Linnæa*, 9. *p.* 265?

Texas, *Drummond!* (v. sp. in *herb. B. D. Greene.*)—The specimen which we describe was mixed with some other plants in Drummond's Texan collection, and not numbered. The plant resembles Bellis integrifolia in aspect, but is smaller, and the heads not half the size: the involucre is very similar; the scales in 2 series, herbaceous in the centre. Rays about 3 lines long, white. Corolla of the disk cyathiform, expanded, deeply 5-toothed, the proper tube very short. Style in the disk-flowers with broadly oblong flat branches, bordered with very thick stigmatic lines, and terminated with a short and flat triangular minutely hairy appendage. Achenia (immature) somewhat compressed and obovate, minutely hispid, crowned with a single series of distinct squamellate-setulose bristles, scarcely exceeding the short hairs of the achenium. We have not seen the lower leaves; and Lessing does not describe the achenia or the style of his plant, which was collected in Mexico by Shiede. Our plant appears to accord with the Australian Brachycomes, and only differs from the annual species of Bellis in the minute pappus; and when we consider that a perennial Spanish Bellis (B. papulosa, *Boiss.*) exhibits a similar pappus, it is evident that the present genus scarcely deserves to be distinguished.

Div. 2. Chrysocomeæ, *DC.*—Heads either heterogamous and radiate, or homogamous and discoid (both forms sometimes occurring in the same genus); the rays and disk-flowers yellow and unchanging. Receptacle never chaffy.

CONSPECTUS OF THE GENERA.

Subdiv. 1. Gymnospermeæ.—Pappus none.

35. Gymnosperma. Rays few, very small.

Subdiv. 2. Achyrideæ.—Pappus chaffy or coroniform.

36. Amphiachyris. Achenia of the disk abortive, the narrow scales of the pappus united at the base; of the ray fertile, with a short pappus.

37. Guttierrezia. Achenia of the disk and ray fertile.

Subdiv. 3. Solidagineæ.—Pappus similar in the disk and ray (when the latter is present), simple, of capillary or rigid, rarely squamellate or awn-like bristles.

* *Pappus of very short squamellate bristles.*

38. **BRACHYCHÆTA.** Rays and disk-flowers each 4–5. Lower leaves cordate.

* * *Pappus of elongated capillary bristles.*

39. **SOLIDAGO.** Rays few, rarely none; disk-flowers several. Receptacle alveolate.
40. **BIGELOVIA.** Rays none: disk-flowers 3–4. Receptacle cuspidate.
41. **LINOSYRIS.** Rays none: disk-flowers 5–many. Receptacle alveolate-toothed. Achenia oblong, silky-villous.
42. **AMMODIA.** Rays none: disk-flowers numerous. Scales of the involucre scarious-membranaceous. Achenia attenuate, hairy.
43. **MACRONEMA.** Rays 6–8, or none: disk-flowers numerous. Scales of the involucre scarcely in two series, with foliaceous tips. Achenia flat, hairy.
44. **ERICAMERIA.** Rays 3–6: disk-flowers 7–9. Scales of the oblong or cylindrical involucre imbricated. Achenia glabrous. Pappus copious.
45. **STENOTUS.** Rays 8–12: disk-flowers numerous. Scales of the hemispherical involucre broad, closely imbricated. Achenia silky-villous. Pappus copious, unequal.
46. **ISOPAPPUS.** Rays 5–12: disk-flowers 10–20. Scales of the cylindrical involucre lanceolate-subulate. Achenia villous. Pappus equal, in a single series.

* * * *Pappus of numerous unequal bristles, more or less rigid.*

47. **APLOPAPPUS.** Achenia oblong or turbinate, villous or silky. Pappus of copious unequal and rather rigid persistent bristles.
48. **PYRROCOMA.** Achenia linear, angled, glabrous. Pappus of copious uniform slender and rigid persistent bristles.
49. **PRIONOPSIS.** Achenia ovoid, glabrous. Pappus of very unequal deciduous bristles; some of them very rigid.
50. **CENTAURIDIUM.** Achenia turbinate, pubescent. Pappus of several nearly definite subulate persistent bristles.

* * * * *Pappus of few rigid awns or bristles.*

51. **GRINDELIA.** Pappus of 2–8 corneous caducous awns.
52. **PENTACHÆTA.** Pappus of 5 persistent rigid bristles.

Subdiv. 4. HETEROTHECEÆ.—Pappus of the ray and disk dissimilar.

53. **BRADBURIA.** Pappus of the ray double; the exterior of short and squamellate, the interior of capillary barbellate bristles; that of the disk of 2 chaffy awns.
54. **HETEROTHECEÆ.** Pappus of the ray none; of the disk as in Chrysopsis.

Subdiv. 5. CHRYSOPSIDEÆ.—Pappus of the ray and disk similar, double.

55. **CHRYSOPSIS.** Exterior pappus short, setose or chaffy; the inner capillary.

Subdiv. 1. GYMNOSPERMEÆ, *DC.*—Pappus entirely wanting.

35. GYMNOSPERMA. *Less. syn. p.* 194; *DC. prodr.* 5. *p.* 311.

Heads 8–14-flowered; the ray-flowers 3–5 (sometimes wanting), very narrow, and with an extremely short ligule, pistillate; those of the disk tubular and perfect, sometimes sterile. Involucre oblong; the scales imbricated, appressed, scarious-coriaceous. Receptacle narrow, naked. Corolla of the disk with a cyathiform 5-cleft limb; the lobes oblong-lanceolate, revolute. Branches of the style oval or oblong; the appendages as long as the stigmatic portion. Achenia oblong-cylindrical, slightly compressed, destitute of pappus.—Suffruticose and fastigiately branched (American) plants, glabrous, mostly glutinous or varnished, with the habit of Solidago § Euthamia. Leaves alternate or sometimes opposite, oblong or linear, sessile, entire, punctate. Heads small, ternate or aggregated at the summit of the branchlets, usually corymbose-fastigiate. Flowers yellow.

1. *G. corymbosum* (DC.): shrubby; branchlets somewhat angled, dichotomous-corymbose; leaves alternate, oblong [or linear-lanceolate], tapering to each end, somewhat viscid, 3-nerved, the lateral nerves slender; heads aggregated three together at the summit of the branchlets, 8-flowered; the ray-flowers 5, those of the disk about 3. *DC.! prodr.* 5. *p.* 312.

Texas, *Dr. Riddell!*—Ligules not half the length of the tube. Achenia minutely puberulent.—De Candolle describes the leaves as oblong, but mentions at the same time their length as 12 to 15 lines, and their breadth 2 lines!

Subdiv. 2. ACHYRIDEÆ, *DC.*—Pappus composed of several persistent chaffy scales, or short and coroniform, sometimes nearly obsolete in the ray.

36. AMPHIACHYRIS. *DC.*, (§ of Brachyris) *notic.* 7. *pl. rar. Genev. p.* 1, *t.* 1, *& prodr.* 5. *p.* 313; *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 313.

Heads many-(20–40-) flowered; the ray-flowers (8–10) ligulate, pistillate, fertile, in a single series; those of the disk staminate and pistillate, but by the abortion of the ovary infertile. Involucre obovoid, shining as if varnished; the scales 10–12, rigid, appressed, imbricated, often bracteolate at the base, coriaceous, the summit abruptly somewhat foliaceous, mostly obtuse. Receptacle alveolate. Corolla of the ray oblong, with a very short tube; of the disk much smaller, infundibuliform. 5-toothed. Branches of the style (in the disk-flowers) oblong-linear, rather acute, papillose-hispid quite to the base. Achenia of the ray oblong or obconic, somewhat terete, with a minute coroniform or nearly obsolete pappus; of the disk none or a mere rudiment; the pappus of 5–8 scarious very narrowly linear scales, slightly dilated towards the summit, about the length of the corolla, united at the base into a campanulate tube.—A perennial (or possibly sometimes annual) herb, or suffrutescent glabrous plant, fastigiately much branched (in the manner of Solidago § Euthamia, with the involucre much as in Sericocarpus); with lanceolate or narrowly linear and entire sessile (1–3-nerved) impressed-punctate leaves, the margins scabrous. Heads terminating the numerous branchlets. Flowers deep yellow.

A. dracunculoides (DC.! l. c.)—*Nutt.! in trans. Amer. phil. soc. l. c.* Brachyris ramosissima, *Hook.! ic. pl. t.* 142; *DC. prodr.* 7. *p.* 278.

Western Arkansas, *Nuttall! Pourtales!* Texas, *Drummond!* Sept.–Oct.—Stem 1–3 feet high; the branchlets angled. Leaves 1–2 inches long; the lower often 3–4 lines wide; or all narrow and only 1–2 lines in width (var. angustissima, *DC.*); the lower obscurely 3-nerved. Peduncles more or less bracteolate. Achenia clothed with a very minute appressed pubescence.—We have not observed so manifest a pappus in the ray as is represented in Hooker's figure; nor do we find more than the slightest rudiment of an ovary in the disk-flowers.

37. GUTIERREZIA. *Lagasca, nov. gen. & spec.* (1816) *p.* 30; *Don, and Hook. & Arn. in compan. to bot. mag.* 2. *p.* 51.

Brachyris, *Nutt.* (1818)—Brachyris § 1. (excl. no. 6.) & Hemiachyris, *DC.*

Heads 8–40-flowered; the ray-flowers ligulate, pistillate, fertile, in a single series; those of the disk tubular, perfect and fertile. Involucre campanulate or turbinate; the scales appressed and closely imbricated, rigid, with somewhat foliaceous greenish tips. Receptacle naked. Corolla of the ray oblong or oval, with a short tube; of the disk infundibuliform, 5-toothed; the teeth short, recurved. Branches of the style in the disk-flowers linear, elongated, obtuse, hairy down to the very short stigmatic lines at the base; in the ray glabrous, the stigmatic lines extending to the summit. Achenia somewhat obconic and terete, pubescent or silky. Pappus of several linear or oblong chaffy scales, mostly in a double series, persistent; that of the ray sometimes obsolete or wanting.—Perennial or suffruticose plants (natives of the region beyond the Mississippi, and of Mexico and South America to the extremity of the continent), glabrous, somewhat glutinous and balsamic, with linear or lanceolate entire mostly impressed-punctate alternate leaves. Heads solitary, or aggregated (about 3 together) at the summit of the corymbose or paniculate branchlets. Flowers yellow.

§ 1. *Pappus as long as the achenium, more or less distinctly in a double series; that of the ray similar to the disk, or often shorter.*—GUTIERREZIA, Lag. (Brachyris, *Nutt.*)

1. *G. Californica:* stem terete, somewhat paniculate at the summit; leaves linear, acute, attenuate at the base, scabrous, slightly ciliate, strongly 1-nerved; heads few, sometimes glomerate, turbinate or obovate; flowers of the disk and ray each 8–10; pappus of mostly 9 narrowly linear rather acute chaffy scales, in the disk longer than the achenium.—Brachyris Californica, *DC.! prodr.* 5. *p.* 313; *Hook. & Arn.! bot. Beechey, suppl. p.* 351.

California, *Douglas!*—Stem a foot high. Limb of the ligulate corolla broadly oval. Achenia silky. Pappus manifestly in a double series; that of the ray shorter.—Hooker & Arnott consider this species not only identical with the following, but also probably the same as G. linearifolia, *Lag.* In G. Euthamiæ, however, the scales of the pappus are shorter and broader, the achenia less hairy, &c.; yet all these species are too closely allied.

2. *G. Euthamiæ:* stems woody and much branched at the base, angled; leaves crowded, narrowly linear, acute, attenuate at the base, 1-nerved, slightly scabrous; corymb compound, fastigiate, contracted; the heads mostly glomerate, turbinate-cylindrical; flowers of the ray and disk each about 5; pappus mostly of 9 oblong-linear obtuse chaffy scales, about the length of the achenium.—Brachyris Euthamiæ, *Nutt.! gen.* 2. *p.* 163; *Hook.! fl. Bor.-Am.* 2. *p.* 23; *DC. l. c.* Brachyachyris Euthamiæ, *Spreng. syst.* 3. *p.* 574. Solidago Sarothræ, *Pursh, fl.* 2. *p.* 540.

Arid hills of the Upper Missouri, &c., *Lewis, Nuttall!* to the Saskatchawan, *Drummond! Douglas!*—Stems numerous, 6–12 inches high. Ligulate flowers spreading; the limb broadly oval. Pappus in a double series; that of the ray mostly a little shorter, but otherwise similar.

3. *G. divaricata:* suffruticose; stems much branched above, divaricate-corymbose; leaves very narrowly linear; the oblong-turbinate heads nearly all solitary and pedunculate; flowers of the ray and disk each about 7; pappus of 9 or 10 narrowly linear acutish chaffy scales, those of the disk longer than the achenium.—Brachyris divaricata, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 313.

On the Platte near the Rocky Mountains, with the preceding, *Nuttall!*—Plant with the habit of the following, and nearly the achenia and pappus of G. Californica.

§ 2. *Pappus of the disk short and nearly coroniform, of the ray obsolete or none.*—HEMIACHYRIS, DC.

4. *G. Texana:* stem shrubby at the base, very much branched, fastigiate-paniculate; the branches slender, angled; leaves narrowly linear, 1-nerved; those of the branchlets very short; heads (small) solitary, turbinate; flowers of the ray 5–7, of the disk 7–10; pappus of the ray none or obsolete; of the disk consisting of several very small ovate chaffy scales.—Hemiachyris Texana, *DC.! prodr.* 5. *p.* 314. Brachyris n. sp. *Nutt.; Torr.! in ann. lyc. New York.* B. microcephala, *Hook.! ic. pl. t.* 147, not of *DC.*

Prairies of Arkansas, *Nuttall, Dr. James! Dr. Leavenworth!* Texas, *Drummond! Berlandier! Dr. Leavenworth! Dr. Riddell!* Aug.–Sept.—Stems 1–3 feet high; the branchlets, heads, &c., somewhat varnished. Scales of the involucre lanceolate-oblong, with scarious margins. Corolla of the ray oblong. Style as in the preceding species. Achenia minutely pubescent.

Subdiv. 3. SOLIDAGINEÆ, *DC.*—Rays in a single series, or often none. Pappus similar in the disk and ray, simple, of capillary or setiform, rarely squamellate or awn-like bristles.

38. BRACHYCHÆTA.

Heads 8–10-flowered; the ray-flowers ligulate, pistillate, fertile; those of the disk tubular, perfect and fertile. Involucre cylindrical; the scales (about 12) imbricated, appressed; the outermost short, the others oblong-linear, with somewhat greenish but scarcely herbaceous tips. Receptacle narrow, naked. Ray-flowers 4–5; the tube of the corolla as long as the oval ligule: corolla of the disk dilated above, 5-cleft; the lobes lanceolate. Branches of the style (in the disk-flowers) acute, produced above the short and flat stigmatic portion, into a deltoid-lanceolate minutely hispid acumination. Achenia somewhat obconic. Pappus of the disk and ray similar, consisting of about 20 scabrous squamellate bristles, in a single series, shorter than the achenia.—A perennial herb, with the habit of Solidago; the stem simple or sparingly paniculate at the summit. Leaves alternate, membranaceous, very veiny, ovate, acute, all but the upper somewhat cordate, on margined petioles, sharply serrate; the radical roundish. Heads small, racemose-glomerate, nearly sessile; the clusters, or near the summit the solitary heads, disposed in an elongated and interrupted somewhat leafless unilateral raceme or spike. Flowers golden yellow.

B. cordata.—Solidago sphacelata, *Raf.! ann. nat.* (1820.) *p.* 14. *no.* 106. S. cordata, *Short! suppl. cat. Kentucky plants.* Brachyris ovatifolia, *DC.! prodr.* 5. *p.* 313.

Wooded hill-sides of Kentucky, *Rafinesque! Dr. Short! &c.* to the mountains of North Carolina, as far east as Wilkes County, *Mr. Curtis!* and of Georgia, *Mr. Buckley!* Aug.–Oct.—Stem 2–4 feet high, pubescent, as well as the lower surface of the leaves, usually with a few lax and spreading or recurved branches at the summit. Radical leaves deeply cordate, 3–5 inches broad, more or less acuminate, finely veined and reticulated, somewhat triplinerved; the cauline gradually reduced in size and less cordate; the upper merely obtuse at the base; the uppermost nearly sessile and entire. Heads about 3 lines long. Rays a little longer than the disk. Achenia almost glabrous.—This plant is more closely allied to Solidago than to Gutierrezia (Brachyris); only differing from the former, indeed, in its cordate leaves and very short pappus. The latter does not consist of 5–6 paleæ, as stated by De Candolle; but of about 20 linear squamellæ, not longer than the ovary, which, if prolonged to the length of the corolla, would form bristles scarcely stronger than those of Solidago.

39. SOLIDAGO. *Linn.; Gærtn. fr. t.* 170; *Schkuhr, handb. t.* 246; *DC.*

Solidago, Euthamia, & Chrysoma, *Nutt.*

Heads few–many-flowered; the ray-flowers few (1–16), or sometimes wanting; those of the disk tubular, perfect. Scales of the oblong involucre imbricated, appressed, destitute (except in Chrysastrum) of foliaceous or herbaceous tips. Receptacle narrow, mostly alveolate. Appendages of the style lanceolate. Achenia many-ribbed, somewhat terete. Pappus simple, of numerous scabrous capillary (mostly equal) bristles.—Perennial herbs, rarely suffruticose (the greater portion North American), mostly with strict or virgate stems, and sessile alternate cauline leaves; the radical never cordate. Heads in terminal or axillary racemes or clusters, sometimes corymbose; the pedicels often unilateral. Flowers yellow (the rays white in S. bicolor), never turning purplish.

§ 1. *Herbaceous: scales of the (much imbricated) involucre with squarrose herbaceous tips: rays 12–16, or entirely wanting: the inner bristles of the unequal pappus slightly thickened at the apex!: heads in glomerate clusters or racemes disposed in a compound spike or panicle: leaves ample, veiny; the lower narrowed into petioles.*—CHRYSASTRUM.

* *Rays none: corolla of the disk deeply 5-cleft: inner bristles of the pappus manifestly clavellate-thickened at the apex.*

1. *S. discoidea:* stem somewhat villous, branching above; leaves mostly pubescent; the lower ovate, coarsely toothed or serrate, abruptly narrowed into a margined petiole; the upper oblong or ovate-lanceolate, acute at each end, somewhat petioled; the uppermost entire; racemes paniculate, often glomerate; scales of the canescently pubescent involucre linear-lanceolate, acute, squarrose; disk-flowers 10–15.—Aster? discoideus, *Ell.! sk.* 2. *p.* 358; *DC. prodr.* 5. *p.* 247.

Georgia, abundant in the high rich lands between the Alabama and Chatahouchie Rivers, *Elliott!* Middle Florida, *Dr. Chapman!* Louisiana, *Drummond!* Sept.-Oct.—Stem 2–4 feet high, stout, clothed with a hoary villous pubescence. Leaves membranaceous, veiny, pale beneath, and more or less pubescent, or sometimes villous, especially on the veins, minutely pubescent above; the lower 2–4 inches long, with margined petioles about the same length, often 2 inches wide, mostly acute and mucronate; the upper gradually reduced in size, less serrate. Racemes erect, disposed in a virgate panicle. Heads smaller than in the succeeding species, often somewhat clustered. Scales of the involucre pale below, with conspicuous squarrose herbaceous tips. Achenia narrow, glabrous or nearly so; in the specimen from Dr. Chapman, pubescent when young. Pappus copious, sometimes turning purplish, unequal; the longer bristles manifestly clavellate-thickened at the apex! In Mr. Elliott's specimens of this interesting plant, the pappus is purplish, but the corolla appears to be yellow (not 'pale purple'), as it certainly is in the other specimens we have met with. That of Dr. Chapman belongs to a large plant, apparently 5 feet high, with an open panicle, and the heads are nearly as large as in S. squarrosa: the achenia also are evidently pubescent, while they are very obscurely so in Elliott's plant. The specimen of Drummond (marked 'No. 328, A, Louisiana,' in *herb. Hook.*) has smaller heads and almost glabrous leaves. In none of them do we find any trace of ray-flowers.

* * *Rays* 12–16*: pappus unequal, a portion of the longer bristles obscurely thickened at the apex.*

2. *S. squarrosa* (Muhl.): stem glabrous below, very pubescent at the summit; leaves mostly glabrous, elliptical-lanceolate or oblong, serrate, scabrous-ciliate, acute, narrowed at the base, sessile; the lowermost broadly spatulate-oval, tapering into a margined petiole; heads (large) in short clusters or glomerate racemes disposed in a dense somewhat leafy compound spike; scales of the minutely pubescent involucre rigid, imbricated in several series, with conspicuous recurved-spreading herbaceous tips; disk-flowers 16 to 24; achenia glabrous.—*Muhl.! cat. p.* 79 (fide spec. in *herb. Collins!*); *Nutt.! gen.* 2. *p.* 161; *Beck! bot. p.* 193; *Darlingt.! fl. Cest. p.* 459; *DC. prodr.* 5. *p.* 337; not of *Nutt. in jour. acad. Philad.*, nor of *Ell.?* S. confertiflora, *Nutt.! in jour. acad. Philad.* 7. *p.* 102; *Hook.! fl. Bor.-Am.* 2. *p.* 4; not of *DC.* S. macrophylla, *Pursh, fl.* 2. *p.* 542?

Rocky banks, &c., Canada! New England States! New York! Pennsylvania! and Alleghany Mountains, *Kin, in herb. Muhl.!* Aug.–Sept.—Stem 2 to 4 feet high, stout, simple. Radical and lowest cauline leaves 3–6 inches long, 1½–3 inches wide, sharply serrate; the upper leaves gradually reduced in size, more acuminate, the uppermost entire; all glabrous, or sometimes scabrous-pubescent on the midrib and principal veins, thickish. Heads showy, about as large as in S. rigida, disposed in a rigid and thick virgate interrupted spike often a foot or more long; which is composed of sessile clusters (the lower mostly shorter, the upper longer than the reduced leaves or bracts from the axils of which they arise), or sometimes of dense racemes about 2 inches in length. Scales of the involucre oblong, rigid, with minutely lacerate-ciliate margins; the innermost more membranaceous and less squarrose. Rays bright yellow, rather large.—This is not only the plant *first published* as S. squarrosa (by Mr. Nuttall), but that *so named* originally by Muhlenberg; as is evident from the habitats New York and Pennsylvania, as well as Georgia, given in Muhlenberg's Catalogue, and from the specimen which Mr. Collins received from that author under this name. Although not ticketed, specimens of this species exist in the Muhlenbergian herbarium; but there are none of S. petiolaris, to which Mr. Nuttall has recently transferred the name. Perhaps, however, the prior name of S. macrophylla should have been adopted; but as neither this species, nor any other with that appellation, is to be found in the Banksian herbarium (which is Pursh's sole authority for the plant), we have not presumed to discard the more appropriate name of S. squarrosa; especially since Pursh's description, though chiefly applicable, is not sufficient to decide the point.

§ 2. *Herbaceous: rays mostly fewer than the disk-flowers, rarely wanting: heads more or less pedicellate, variously disposed.*—VIRGAUREA, (Tourn.) DC.

* *Heads in axillary clusters or short racemes, and often racemose at the extremity of the stem or branches: leaves feather-veined.*—Glomerulifloræ.

† Racemes or clusters often longer than the leaves, and racemose or spicate at the summit of the stem or branches.

3. *S. bicolor* (Linn.): hairy and often cinereous; stem simple, or sometimes branched at the summit; leaves oblong or elliptical-lanceolate, acute at each end; the upper sessile and often entire; the radical and lower cauline oval or spatulate-oblong, serrate, tapering into a petiole; heads in glomerate clusters or short racemes from the axils of the upper leaves, and forming an interrupted spike, or with the spicate somewhat leafy racemes more or less prolonged and paniculate; scales of the somewhat glabrous involucre oblong, obtuse; rays 7–9, short, whitish or ochroleucous; the disk-flowers (9–14) pale yellow.—*Linn.! mant. p.* 114; *Ait.! Kew.* (*ed.* 1) 3. *p.* 216; *Michx.! fl.* 2. *p.* 116; *Pursh, fl.* 2. *p.* 537; *Ell.! sk.* 2. *p.* 382; *Bigel.! fl. Bost. ed.* 2. *p.* 306; *Hook.! fl. Bor.-Am.* 2. *p.* 3; *Darlingt.! fl. Cest. p.* 458; *DC.! prodr.* 5. *p.* 335. S. alba, *Mill. dict.* Virga-Aurea flore albo, &c. *Pluk. alm. t.* 114, *f.* 8. Aster bicolor, *Nees. synops.*; *Spreng. syst.* 3. *p.* 536.

β. concolor: flowers of the ray and disk yellow.—S. hirsuta, *Nutt.! in jour. acad. Philad.* 7. *p.* 103, *& in trans. Amer. phil. soc. l. c.*

Woodlands and borders of thickets, Canada! Saskatchawan! and Northern States! to Kentucky! and the mountains of Georgia. *β.* Kentucky, *Dr. Short!* Near Philadelphia, *Mr. Gambell!* Aug.–Sept.—Stem 1–3 feet high, often very hairy or villous towards the base, commonly simple; the compact axillary clusters of rather large heads approximate and forming an interrupted virgate spike, leafy below, naked and nearly simple at the summit; but the lower clusters frequently developed into racemes or branches 2–4 inches in length. Leaves more or less hairy on both sides; the lower 2–5 inches long; the upper gradually reduced in size, less serrate and more sessile. Scales of the involucre with greenish tips and midrib. Achenia glabrous or nearly so when mature; when young sometimes entirely glabrous, but often sparsely pubescent.—We can in no way distinguish the S. hirsuta, *Nutt.* from S. bicolor, except by the color of the rays, in which the latter differs from the rest of the genus: these, however, are not pure white in S. bicolor, but cream-color; and in some specimens, as in those from Saskatchawan mentioned by Hooker, they appear to be light yellow.

4. *S. lanata* (Hook.): villous or woolly throughout; stem branched above; lower leaves spatulate-oblong, serrate, tapering into margined petioles; the uppermost and those of the simple virgate branches oblanceolate, mostly entire; racemes spicate, nearly simple; scales of the involucre oval or oblong, obtuse, nearly glabrous; rays 6–8; achenia almost glabrous.—*Hook.! fl. Bor.-Am.* 2. *p.* 4.

Plains of the Saskatchawan near the Rocky Mountains, *Drummond!*—Stem apparently about 18 inches high, producing near the summit a few simple and loose elongated branches, terminated by rather dense racemes or spikes about 2 inches long. Leaves membranaceous; the lowest nearly 4 inches long, including the winged petiole; the uppermost very small. Heads smaller than in S. bicolor, but otherwise very similar, about 15-flowered. Achenia minutely pubescent-scabrous under a lens.

† † Clusters or glomerate racemes mostly short and axillary.

5. *S. pubens* (M. A. Curtis! mss.): stem virgate, nearly terete, pubescent, tomentose-villous above; leaves (membranaceous) oval-lanceolate, acuminate at each end, sessile, coarsely and unequally serrate-toothed, nearly glabrous above, pubescent especially on the veins and midrib beneath; heads in small axillary clusters; the lower remote, the upper approximate and forming a continuous and contracted virgate raceme; involucre as well as the very short peduncles villous-tomentose; the scales linear, rather obtuse, unequal; rays and disk-flowers each 4–7; achenia canescent.

Charlotte, Mecklenburg County, North Carolina, *Mr. Curtis!* Aug.–Sept.—Stem slender, apparently simple and 2–3 feet high; the flowering portion often a foot long, with 7 or 8 of the lower roundish clusters much shorter than the leaves; the others similar but crowded (the subtending leaves reduced to bracts), forming a continuous spicate raceme 3–5 inches long. Leaves 3–5 inches in length, an inch or more in breadth, the upper surface sprinkled with minute appressed hairs; the upper successively reduced in size, less pointed but more tapering to the base, less serrate, more hairy above and pubescent beneath. Heads about as large as in S. cæsia; the rays rather small.

6. *S. Buckleyi:* stem and lower surface of the oblong (acute at each end) subsessile leaves villous-pubescent; heads in small (loose) axillary clusters much shorter than the leaves; peduncles villous; scales of the involucre nearly glabrous, rather acute; the exterior ovate-lanceolate, short; the innermost linear; rays 4–6, the disk-flowers 9–12; achenia short and broad, (compressed?) glabrous.

Interior of Alabama, *Mr. S. B. Buckley!* Oct.—Stem (simple or branched?) apparently 2 feet or more in height, almost villous with soft hairs, leafy to the summit. Leaves about 3 inches long, and an inch to an inch and a half in breadth, nearly equal, membranaceous, copiously feather-veined, the veins and veinlets of the lower surface villous-pubescent, unequally and not very coarsely serrate with broad teeth, or the uppermost entire; the upper surface nearly glabrous. Heads larger than in S. latifolia; the lowermost nearly solitary on very short peduncles, the upper 5–8 together in short racemes or clusters. Involucre shorter than the disk; the outermost scales only pubescent. Rays rather small. Achenia perfectly glabrous, apparently compressed!—The only specimen we possess is somewhat imperfect.

7. *S. latifolia* (Linn.): stem angled, often flexuous, glabrous: leaves broadly ovate or oval, very strongly and sharply serrate-toothed, conspicuously acuminate at both ends, or somewhat petioled, mostly hairy on the veins beneath; heads in short axillary clusters or oblong racemes, and racemose or somewhat paniculate at the summit of the stem; peduncles pubescent; exterior scales of the glabrous involucre very short; the interior oblong-linear or slightly spatulate, obtuse; rays 3–4, large; the disk-flowers 6 or 7; achenia silky-pubescent.—*Linn.! spec.* 2. *p.* 879; *Smith, in Rees, cycl. no.* 49; *Muhl.! cat. p.* 79; *Torr.! compend. p.* 304. S. flexicaulis, (*Linn. spec.*, ex syn. *Pluk. & Herm.*, not of *herb.*) *Ait.! Kew.* (*ed.* 1) 3. *p.* 217; *Michx.! fl.* 2. *p.* 118 (*a.*); *Ell.! sk.* 2. *p.* 386; *DC.! prodr.* 5. *p.* 335. S. flexicaulis *β.* latifolia, *Willd. spec.* 3. *p.* 2064; *Pursh, fl.* 2. *p.* 542; *Hook.! fl. Bor.-Am.* 2. *p.* 5; *Darlingt.! fl. Cest. p.* 460. S. macrophylla, *Bigel. fl. Bost. ed.* 2. *p.* 305. Virga-Aurea Canadensis, &c. *Herm. parad.*

Bat. t. 244 (poor). V. montana Scrophulariæfolio, *Pluk. alm. t.* 235, *f.* 3. V. latissimo folio Canadensis glabra, *Pluk. l. c. f.* 4? (Varies, with the glomerate racemes, which usually do not exceed the margined petiole or attenuate base of the leaves, sometimes prolonged and exceeding the leaves, either simple or branched, or paniculate. S. flexicaulis, var. 2. *Michx.* S. flexicaulis β.? ciliata, *DC.! l. c.*)

Moist woods and shady banks of small streams, Canada! and Northern States! to Kentucky! and the mountains and upper country of Georgia. Aug.–Oct.—Stem usually simple, 1–3 feet high, very commonly flexuous, angled by 2 or 3 decurrent lines from the base of the leaves, often hairy or pubescent at the summit. Leaves membranaceous, 3–5 or 6 inches long, and 1½ to 3 or 4 inches wide (the upper smaller and narrower, the uppermost much reduced in size), abruptly narrowed (the lowermost sometimes almost cordate) at the base into a winged petiole, fully as long as the acuminate apex of the leaf, closely, unequally, and very sharply serrate-toothed, or almost laciniate-toothed, the teeth triangular-lanceolate and spreading, often ciliate; the upper surface glabrous, or scabrous with short scattered hairs. Heads middle-sized; the clusters or racemes mostly sessile.—It must be admitted that the broader-leaved forms of S. cæsia sometimes too closely approach this species, yet we cannot but consider them as distinct. The very broad abruptly petioled leaves, with closely set and spreading teeth, and the angular stem, obviously distinguish the S. latifolia; which is one of the most common species throughout the Northern States.

8. *S. cæsia* (Linn.): stem terete, simple or branching, seldom flexuous, glabrous, mostly glaucous; leaves lanceolate or oblong-lanceolate, glabrous, serrate, acuminate, sessile; heads in short axillary clusters, and sometimes racemose-paniculate at the summit; peduncles pubescent; exterior scales of the nearly glabrous involucre oblong, short; the interior oblong-linear, obtuse; rays 3–4; the disk-flowers 5–7; achenia pubescent.—*Linn. spec.* 2. *p.* 879; *Ait.! Kew.* (*ed.* 1) 3. *p.* 217; *Pursh, fl.* 2. *p.* 540; *Smith, in Rees, cycl. no.* 37; *Ell.! sk.* 2. *p.* 385; *Bigel.! fl. Bost. ed.* 2. *p.* 306; *Darlingt.! fl. Cest. p.* 460; *DC.! prodr.* 5. 336. S. flexicaulis, *Linn.! herb.* (*& spec. l. c.?* excl. syn.); *Smith, l. c.*; not of *Ait.*, *DC. &c.* S. flexicaulis, var. 3, *Michx.! fl.* 2. *p.* 118. S. axillaris, *Pursh! fl.* 2. *p.* 542; *Beck, bot. p.* 193; *DC. prodr.* 5. *p.* 335. S. livida, *Willd. enum. p.* 890; *Pursh, fl.* 2. *p.* 541. Virga-Aurea Marilandica cæsia glabra, *Dill. Elth. t.* 307, *f.* 395.—(Varies, with the stem simple, or considerably branched; the heads in small globular clusters, or in more or less prolonged racemes at the summit of the stem or branches; the leaves vary from oblong-lanceolate to elongated linear-lanceolate, &c.)

Woodlands and thickets, Canada! to Georgia! and Louisiana! Aug.–Oct.—Stem 1–3 feet high, slender, often purplish, and of a glaucous hue. Leaves 2–5 or even 6 inches long, one-third or half an inch to an inch and a half wide, smooth, except the scabrous margins, mostly narrowed at the base, but sessile, irregularly and sharply serrate, with the teeth either appressed, or often coarse and somewhat spreading; the uppermost usually entire; the radical and lowermost ovate or oblong and tapering into a slight petiole. Heads nearly as large as in S. latifolia; the bright yellow rays very similar, the achenia pubescent, but not silky or canescent.—There is no specimen of S. cæsia in the Linnæan herbarium, and that species appears to have been founded on the figure of Dillenius. Although the specimen of S. flexicaulis in the herbarium of Linnæus certainly belongs to this species, as Smith has long since remarked, yet we are unwilling to employ that name; 1st, because the stem is very seldom flexuous; 2nd, because most succeeding authors have applied it to S. latifolia, while the equally ancient name of S. cæsia has not been misapplied; and 3rd, because the specific phrase given by Linnæus, and the entire synonymy, belong to S. latifolia. Those authors,

however, who unite the two species very properly adopt the name of S. flexicaulis.

9. *S. Curtisii:* stem tall, very strict and simple, striate-angled, nearly glabrous; leaves elongated-lanceolate, smooth and mostly glabrous, finely and sharply serrate above the middle, gradually tapering to the base, sessile, sharply acuminate; heads in dense and sessile axillary clusters, all many times shorter than the leaves; involucre minutely pubescent; the exterior scales short (few), the others linear, rather obtuse; rays and disk-flowers each 4–6; achenia minutely pubescent.

β.? monticola: leaves sparingly appressed-serrate; the upper scarcely longer than the subsessile glomerate clusters, the uppermost reduced to bracts; scales of the about 15-flowered involucre narrowly-linear, acute; achenia glabrous.

Mountains of North Carolina (β. Yellow Mountain), *Mr. M. A. Curtis!* &c. Aug.–Sept.—Stem virgate, 3–5 feet high, rather stout, leafy to the summit (where it is somewhat pubescent), grooved and striate-angled, not glaucous. Leaves rather equal throughout, membranaceous, 5–6 inches long, half an inch to an inch wide, irregularly and sharply serrate, gradually (the upper slightly, the lower ones conspicuously) tapering to the sessile base. Peduncles and pedicels very short, pubescent. Heads as large as in S. cæsia; the scales of the involucre narrower, &c.—We have only an imperfect specimen of var. β.? which appears to be a smaller plant, with shorter leaves; the glomerate clusters approximate, and near the summit forming a strict interrupted spike; the heads rather smaller, but the flowers more numerous.

10. *S. ambigua* (Ait.): stem somewhat flexuous, glabrous, angled, branching; leaves oblong-lanceolate, densely serrate, slightly hairy beneath; racemes erect; rays elongated [scales of the involucre lanceolate, acute; achenia canescently hairy]. *Ait.! Kew.* (*ed.* 1) 3. *p.* 217; *Smith, in Rees, cycl.; DC. prodr.* 5. *p.* 336? (The additions to the character derived from the specimen in *herb. Banks.*)

β.? lancifolia: leaves elongated lanceolate, attenuate-acuminate; racemes pedunculate, somewhat compound or paniculate, numerous, all but the lowermost longer than the leaves, forming an elongated panicle; rays rather small.

North America? described from specimens of unknown origin, cultivated in 1759 by Miller, and in the Kew Garden. Smith supposes that it may be a variety of S. latifolia; "from which it differs in its somewhat narrower leaves, and much greater length of the upper clusters of flowers, which combine to form a close panicle." The figure he cites from Plukenet doubtless belongs to S. latifolia; and the plant cultivated as S. ambigua in the Berlin Garden, and some others, is probably nothing but a state of that species. But the original plant must be different, as the scales of the (perhaps 20-flowered) involucre are lanceolate or linear-lanceolate, acute, and more imbricated. If really of American origin, the plant we have doubtfully subjoined is probably not specifically distinct from it.—The latter was collected on the Yellow Mountain in North Carolina by *Mr. M. A. Curtis.* The angular stem is apparently simple and 3 feet in length (the base is wanting in the specimen); the flower-bearing portion a foot long, somewhat pubescent. The leaves, instead of elliptical-lanceolate and abruptly narrowed into a short winged petiole, as in the original S. ambigua (like a narrow-leaved var. of S. latifolia), are elongated lanceolate, tapering gradually from near the middle to the base, 4 to 5 inches long, less than an inch in width, thin, smooth and glabrous, or with a few scattered hairs, sharply and rather finely serrate, except the slender acuminate apex and near the base. Racemes 20 or more, approximate, erect or somewhat spreading, more or less compound, naked at the base (pedunculate); the lower about 3 inches in length but rather shorter than the subtending leaves; the upper successively shorter, but longer than the reduced narrowly lanceolate and nearly entire leaves: heads usually crowded on the branches of the raceme, on short pedicels, or nearly sessile. Scales of the involucre glabrous or minutely granular, similar to the original S. ambigua, or perhaps a little broader. Achenia canescently hairy.—If we mistake not, this is by no means an uncommon species in the mountains of North Carolina, but we have only seen the living plant before the flowering season.

* * *Racemes terminal, erect, not secund, either simple and virgate, or compound and paniculate: leaves feather-veined.*—Virgatæ.

11. *S. virgata* (Michx.): glabrous throughout; stem virgate, simple, very slender; leaves somewhat fleshy, entire, with scabrous margins; the radical and lowest cauline oblong-spatulate or oblanceolate, often obscurely serrate, petioled; the others small, appressed, lanceolate-oblong, sessile; those of the attenuated upper part of the stem very small and bract-like; heads (middle-sized) numerous, in a very strict or spiciform compound raceme; scales of the involucre linear-lanceolate, glabrous; rays 5–7, elongated; achenia pubescent.—*Michx.! fl.* 2. *p.* 117; *Pursh, fl.* 2. *p.* 538; *Nutt.! gen.* 2. *p.* 160; *Ell.! sk.* 2. *p.* 384; *DC. prodr.* 5. *p.* 338.

Pine barrens, mostly in damp soil, New Jersey! to Florida! and Alabama! Sept.–Oct.—(June to Oct., *Ell.*)—Stem 2–4 feet high, very strict and simple, leafy throughout, but the leaves of the upper part of the stem reduced to mere bracts (one-half to one-fourth of an inch in length), terminated by a virgate compact raceme, 3–12 inches long, which is composed of short approximate racemes, bearing 3–6 heads; the short peduncles and slender pedicels appressed, glabrous, furnished with subulate bracts. The general raceme is often more or less secund; and occasionally the inflorescence is more compound and paniculate. Heads about 16-flowered. Exterior scales of the involucre short and often subulate; the inner rather acute. Radical leaves 5–8 inches long, including the margined petiole, 6–12 lines wide, obscurely serrulate, or not unfrequently quite entire.

12. *S. pulverulenta* (Nutt.): minutely and softly puberulent; stem simple, virgate, very leafy; cauline leaves short, obovate-oblong, obscurely veined, mostly entire, often mucronate-acute, attenuate at the base, sessile; the radical and lowermost oblong or spatulate, serrate, tapering into a petiole; heads numerous, crowded on the short peduncles, and disposed in a long and strict compound raceme; scales of the involucre narrowly lanceolate, acute, appressed; rays about 10, elongated; achenia glabrous.—*Nutt.! gen.* 2. *p.* 161; *Ell. sk.* 2. *p.* 384; *DC. prodr.* 5. *p.* 338.

β. peduncles somewhat elongated, and often spreading, forming an expanded compound raceme.

Georgia and Florida, *Baldwin.* Alabama, *Dr. Gates!* North Carolina, *Mr. Curtis!* Sept.—Stem 2–3 feet high, very strict and simple, terminating in a narrow and somewhat spicate raceme (rarely more expanded and compound), 8–16 inches in length. Radical and lowest cauline leaves similar to those of S. puberula; the others gradually diminishing from an inch and a half to half an inch in length, and from 6 to 3 lines in breadth, obovate or oblong; the lower often serrate. Heads as large as in S. puberula, but fewer-(20–25)-flowered: the puberulent involucre nearly similar, but the scales rather broader.—Distinguished from the too closely allied S. puberula by the more manifest cinereous pubescence, the short and broad cauline leaves, and the contracted virgate inflorescence; but in some specimens (var. *β.*) the lower peduncles are prolonged into racemes of considerable length.

13. *S. puberula* (Nutt.): very minutely puberulent; stem simple; cauline leaves lanceolate, acute, tapering to the base, sessile, mostly entire; the lower oblanceolate and somewhat serrate; the lowest and radical oblong-spatulate, serrate towards the apex, petioled; heads (middle-sized) in numerous compact erect-spreading racemes (often compound), forming an elongated or sometimes thyrsiform panicle; scales of the involucre linear-subulate, appressed; rays about 10, elongated; achenia nearly glabrous.—*Nutt.! gen.* 2. *p.* 162; *Darlingt.! fl. Cest. p.* 459; *DC.! prodr.* 5. *p.* 333. S. pubescens, *Ell.! sk.* 2. *p.* 381; *DC. l. c.*

Sandy woods &c. mostly in damp soil, Maine (*Mr. Oakes!*) and Massachusetts! New Jersey! &c. to Georgia! Aug.–Oct.—Stem 2–4 feet high, strict, often purplish. Leaves thin, soft to the touch from the minute pubescence, which is scarcely visible to the naked eye, somewhat veiny; the radical ones 3–6 inches long, including the slender winged petioles, obtuse; the lower cauline 2–3 inches long and 6–8 lines wide, gradually diminishing upwards. Racemes very numerous, either short and disposed in a long and dense virgate compound raceme, or narrow panicle; or with the lower racemes elongated, and either simple or compound, forming a more expanded panicle. Heads about 28-flowered: rays golden yellow. Achenia very minutely pubescent under a lens, glabrous or nearly so when mature.

14. *S. confertiflora* (DC.): herbaceous, glabrous, viscous; stem simple, leafy to the thyrsus; leaves oval-lanceolate or oblong-lanceolate, serrate at the apex, entire below, tapering (particularly of the lower ones) into long petioles; heads 8–14-flowered, very much crowded in a spiciform thyrsus; scales of the involucre linear, erect; rays few and small.—*DC.! prodr.* 5. *p.* 339, not of *Nutt.* S. glutinosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 328. S. compacta, *Turcz. in bull. soc. nat. Mosc.* 1840, *p.* 73?

Nootka and Mulgrave Sound, *Hænke* ex *DC.* Plains of the Oregon and Wahlamet, *Nuttall!*—"About 2 feet high, with a brown stem, angular above; lower leaves 3 or 4 inches long. by about half an inch wide; the radical attenuated into long petioles. Upper part of the stem, bracts, and involucrum indued with an orange varnish-like resin, of a strong, aromatic, and rather unpleasant taste. Rays about 8–10 [we observe 5–8]: discal florets 5 or 6: pappus of the rays a little shorter," *Nutt.*—Not having compared the two, we are not certain that the S. glutinosa, *Nutt.* is the S. confertiflora, *DC.*; but we find no essential difference. In the former, the radical leaves are lanceolate-spatulate, 3–4 inches long, sharply serrate near the apex, with a long attenuate entire base, veiny and somewhat triplinerved: the cauline 2–3 inches long, 3–4 lines wide, rather obscurely reticulate-veined, the lower more attenuate at the base. Heads middle-sized, in short glomerate racemes which are aggregated in a spiciform panicle. Exterior scales of the involucre ovate or roundish, very short; the middle ones ovate-oblong, the innermost linear-oblong. Rays small. Achenia minutely pubescent.

15. *S. spiciformis:* glabrous or nearly so; stem ascending, simple (somewhat glutinous?); leaves obovate-spatulate, finely serrate, tapering into a narrow entire base, or the lower into long margined petioles, reticulate-veined; racemes short, crowded in a dense spike or thyrsus; scales of the involucre oblong, very obtuse, appressed, nearly glabrous; rays about 7, very small; achenia silky-pubescent.—S. petiolaris, (*Less. in Linnæa, l. c.?*) *Hook. & Arn. bot. Beechey, p.* 145, chiefly; not of *Ait.*

Monterey, California, *Capt. Beechey!* (v. sp. in *herb. Hook.*)—Stem stout, 8–12 inches high; the base decumbent and apparently somewhat persistent, densely clothed with spatulate leaves, which taper into slender petioles: above with more scattered and less petioled leaves; those near the summit small and sessile. The leaves are all glabrous or nearly so, usually serrate with close and fine acute teeth, except the narrowed base, mostly obtuse, and

manifestly reticulate-veined beneath. Heads middle-sized or rather large, crowded on the short erect racemes, and disposed in a dense spike or thyrsus 3–5 inches in length, about 25-flowered. Rays short and inconspicuous.

16. *S. Californica* (Nutt.): villous and cinereous: leaves nearly all equal and somewhat crowded, oblong-lanceolate, acute at each end, near the apex sometimes very slightly serrulate; panicle elongated, nearly equal; scales of the involucre lanceolate, acute, somewhat pubescent; rays about 9; achenia pubescent. *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 238. S. petiolaris, *Less. in Linnæa*, 6. *p.* 502?

β. softly cinereous-pubescent: leaves oblong, mostly obtuse, attenuate at the base, veiny; heads somewhat secund?—S. petiolaris, *Hook. & Arn.! bot. Beechey*, *p.* 145, partly. S. puberula, *Cham. & Schlecht. l. c.?*

St. Barbara, California, *Nuttall.* *β.* Monterey, California, *Capt. Beechey!*—"Two or 3 feet high. Discal flowers about 9, as well as the rays. Allied to the preceding [S. nana]; but softly villous and acute-leaved: the stem-leaves are also nearly as large as the radical ones, about an inch or an inch and a half long, by less than half an inch wide." *Nutt.*—In the only specimen of var. *β.*, the lower part of the stem is wanting: the leaves are much like those of S. ovalifolia; the lower 1–2 inches long, considerably attenuate at the base, the upper successively smaller, some of them obscurely serrate towards the apex. The heads are not much larger than in S. nemoralis, 14–16-flowered, crowded; the rays small, about 7. Scales of the involucre lanceolate, acutish, slightly pubescent. The terminal portion of the panicle or compound raceme appears to have been somewhat curved and unilateral.

17. *S. petiolaris* (Ait.): stem simple and virgate, often branching above, leafy, covered with a close pubescence, nearly tomentose at the summit; leaves oval or elliptical, mucronulate, veiny, somewhat scabrous above and puberulent-tomentose beneath (at least the midrib and veins), scabrous-ciliolate; the upper mostly entire, abruptly and slightly petioled; the lower often serrate, narrowed at the base: heads (rather large) in a single virgate raceme or several paniculate racemes; scales of the pubescent involucre lanceolate; the exterior loose or spreading, somewhat herbaceous; rays about 10, elongated; achenia at length glabrous.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 216; *Smith! in Rees, cycl.;* not of *Muhl.*, *Ell.*, nor of *Less.* S. erecta? *Nutt.! gen.* 2. *p.* 161; perhaps also of *Pursh, fl.* 2. *p.* 542. S. elata? *Ell.! sk.* 2. *p.* 389, not of *Pursh.*

β. squarrulosa: exterior scales of the involucre linear or subulate, more herbaceous, somewhat squarrose.—S. squarrosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 102; not of *Nutt. gen.*, nor of *Muhl.*, or *Ell.?*

Pine barrens and sandy, usually dry soil, North Carolina! to Georgia! Florida! and Western Louisiana! Aug.–Sept.—Stem 1–2, rarely 3 feet high, clothed with a fine and short somewhat hoary pubescence, which at the summit and on the peduncles, &c. is tomentose. Leaves pale, almost glabrous or slightly scabrous above, prominently feather-veined beneath, and often somewhat reticulated, either obtuse or acute, 1–2 inches long, gradually diminishing in size upwards; the lower more or less narrowed at the base, but very slightly petioled, usually serrate with small scattered teeth; the upper rounded at the base, slightly petioled, it may be, but appearing sessile. Raceme usually virgate, terminating the stem or branches; or often several disposed in a panicle, rarely nearly simple; the heads usually 2–5 on each short peduncle, and on mostly slender bracteolate pedicels, pretty large, 20–25-flowered. Rays bright yellow. Achenia minutely pubescent when young, glabrous when mature. Inner scales of the involucre with somewhat greenish tips, appressed; the exterior short and loose, gradually passing into the subulate bracts of the pedicels: in var. *β.* these bracts are more numerous, and the attenuated and longer exterior involucral scales exactly resemble them, giving the involucre a squarrose appearance. The extreme forms would seem to belong to different species (although no other difference is observable); but a full suite of specimens furnishes every gradation between them.—No species could less deserve the name of S. petiolaris than this, at least in its ordinary forms: if the leaves may be said to be petioled, they are so slightly so, that we believe no author has identified the plant by the character; but, as this is certainly the plant described in the Hortus Kewensis, as well as by Smith, we do not feel at liberty to reject it. —For his S. erecta, Pursh cites *Herb. Banks. mss.*; but there are no specimens with this name in the Banksian herbarium: he not improbably had the present species in view, to which his short character is not inapplicable. —The S. petiolaris of the Berlin Garden, 1839 (and of *Link. enum.?*) is S. Virga-Aurea. The S. petiolaris, *Thuillier*, of the Paris and some other gardens, is S. Narbonensis, *Pourr.* (Vide *S. elata.*)

18. *S. angusta:* stem strict and simple, leafy, slightly scabrous; leaves lanceolate, mucronate-acute, tapering to the base, sessile, sparsely veined, with a prominent midrib, glabrous, with ciliate-scabrous margins; the lowermost obscurely serrate towards the apex; the others entire; heads (rather large) in a contracted raceme; scales of the almost glabrous involucre lanceolate; the outermost subulate, loose, or at length squarrose-spreading, somewhat herbaceous; rays about 10, elongated; achenia glabrous.

Alexandria, Western Louisiana, *Dr. Hale!* Arkansas near the Hot Springs, *Dr. Engelmann!* Sept.—Stem 3–4 feet high, virgate, very leafy throughout, glabrous below, scabrous-puberulent towards the summit. Leaves bright green above, pale beneath, oblanceolate, ciliate with minute and close uncinate hairs; the midrib and the few veins rather prominent on the lower surface; the lower 3 inches or more in length, and nearly three-fourths of an inch in width; the upper gradually diminishing in size, and less veiny. Heads resembling those of S. petiolaris, 2 to 4 upon the short peduncles, which are disposed in a narrow somewhat crowded raceme 4–6 inches long, 25–30-flowered. Involucre and pedicels apparently slightly viscid. Rays conspicuous, deep yellow. Achenia and ovaries perfectly glabrous.

19. *S. stricta* (Ait.): smooth and glabrous throughout; stem strict and very simple; leaves lanceolate, acute; the radical and lower cauline sparingly appressed-serrate, tapering into winged somewhat sheathing petioles; the upper sessile, entire; racemes (simple or compound) appressed, numerous, forming a crowded and very strict virgate panicle, which is usually leafy towards the base; heads (rather small) 8–12-flowered; scales of the cylindrical involucre linear-oblong, obtuse; rays 5–6, small; achenia glabrous.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 216; *Willd. spec.* 3. *p.* 2062; *Pursh, fl.* 2. *p.* 540? (excl. habitat); *Richards. appx. Frankl. journ. ed.* 2. *p.* 33; *Hook.! fl. Bor.-Am.* 2. *p.* 4 (excl. Saskatchawan spec.); *DC. prodr.* 5. *p.* 340? S. uliginosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 101, partly?

Sphagnous swamps, Newfoundland! Hudson's Bay! (*Herb. Banks*) &c. to Massachusetts! and the Western part of New York! July–Aug.—Stem 1–3 feet high, virgate, usually purple, perfectly smooth to the summit, even the peduncles and pedicels glabrous or very nearly so. Leaves of a firm texture, with a strong midrib, and several straight veins, the veinlets of the pale lower surface minutely reticulated: the radical (appearing in the autumn preceding flowering, and remaining through the winter) 6–10 inches long, an inch to an inch and a half wide in the middle, tapering to each end (the primordial obtuse), the base attenuate into a carinate petiole about the same length; the lower cauline similar, but with shorter sheathing petioles; the upper gradually reduced in size and breadth.—A northern species, distinguished by its smoothness, elongated-lanceolate willow-like leaves (the popular name applied in Hortus Kewensis, "Willow-leaved Golden Rod," is appropriate); the panicle narrow and perfectly strict (6 to 18 inches long, and only 1–2 wide), entirely in fruit by the middle of September; the achenia entirely glabrous, or rarely presenting a few minute scattered hairs, under a lens.—A near approach to this species is sometimes observed in narrow-leaved states of S. neglecta, with short racemes, at first scarcely if at all spreading or secund.

20. *S. speciosa* (Nutt.): stem simple, stout, glabrous; the summit, with the peduncles and pedicels hirsute-pubescent; leaves thickish, smooth and glabrous, with densely scabrous-ciliolate margins; the lower oval or ovate, narrowed into a margined petiole, somewhat serrate, the upper lanceolate or oblong-lanceolate, entire; racemes numerous, erect, forming a pyramidal or thyrsiform (usually ample) panicle; heads (pretty large) on short pedicels, somewhat crowded or glomerate; scales of the cylindrical nearly glabrous involucre oblong, obtuse; rays about 5, large; achenia very glabrous.—*Nutt.! gen.* 2. *p.* 160 (excl. syn. *Pers.*); *Darlingt.! fl. Cest. p.* 459. S. sempervirens, *Michx.! fl.* 2. *p.* 119, not of *Linn.* S. petiolaris, *Muhl.! cat. p.* 79; *Bart. fl. Phil.* 2. *p.* 121; not of *Ait.*

β. angustata: smaller, less pubescent at the summit; racemes short and glomerate, forming a narrow and dense, interrupted or somewhat compound spike.—S. erecta? *Ell.! sk.* 2. *p.* 385; *DC. prodr.* 5. *p.* 340?

γ. rigidiuscula: heads smaller; panicle strict; peduncles and summit of the stem less pubescent; leaves nearly all entire and smaller, lanceolate or oblong, more rigid.

Borders of woods &c. (Canada, *Michaux*) Massachusetts! and Ohio! to Kentucky! and Florida! *β.* New Jersey! North Carolina! South Carolina! Kentucky! &c. *γ.* St. Louis, Missouri and Texas, *Drummond! Dr. Engelmann!* Louisiana, *Dr. Leavenworth!* Prairies between the Mississippi and Missouri Rivers, *Mr. Nicollet!* Aug.–Oct.—Stem 2½ to 5 or even 6 feet high, stout, erect, glabrous and often purple; the summit and the branches of the inflorescence pubescent, in a greater or less degree, with short and close jointed hairs, not unfrequently almost hirsute. Radical leaves 6 inches or more in length, and 2–4 wide, sharply serrate, petioled; the lower cauline ample, 4–6 inches long, 1–2, or often 3 inches wide, acute or slightly acuminate, narrowed into a slight margined petiole, thickish, very smooth except the margins, with a rather strong midrib; the primary veins seldom prominent; the veinlets very copiously and minutely reticulated; upper leaves successively much reduced in size; the primary veins obscure and similar to the immersed, inconspicuous, but finely reticulated veinlets. Panicle very showy, 6–18 inches in length, composed of numerous, rigid, dense or spicate racemes, which vary from 1 to 5 inches in length. Heads crowded, 12–16-(rarely 18-) flowered, large for the number of flowers they contain, but somewhat variable in size. Scales of the involucre 1-nerved, pale, with greenish summits, glabrous or nearly so, appressed, large; the exterior oval or oblong, short, very obtuse; the innermost linear-oblong, sometimes acutish. Rays conspicuous, deep yellow.—A very showy species, varying considerably in the size of the leaves, and in the panicle, which in some specimens is very large and compound; in others small and simple. The var. *β.* is a reduced state, growing in poor soil; its contracted inflorescence often simulating S. bicolor, for which indeed it has sometimes been mistaken. Var. *γ.*, which probably grows in more arid situations, has smaller heads as well as leaves; the latter often conspicuously veined and more rigid.

21. *S. verna* (M. A. Curtis! mss.): softly cinereous-pubescent; stem erect or ascending, loosely paniculate at the summit; the branches nearly naked; leaves scattered, veiny, minutely tomentose beneath; the radical and lower cauline ovate or oval, finely serrate, abruptly narrowed into mar-

gined petioles; the uppermost oblong or lanceolate, sessile, mostly entire; racemes loose, paniculate, or rarely somewhat corymbose, sometimes slightly recurved; scales of the nearly glabrous involucre linear-lanceolate; rays 10–12, large; achenia pubescent.

Open sandy pine woods, near Wilmington, and Lenoir County, North Carolina, *Mr. M. A. Curtis!* (Florida, *Herb. Rafinesque!*) May–June.—Stem about 2 feet high, almost villous when young. Radical and lowest cauline leaves 2–3 inches long, and often 2 inches wide, usually somewhat triple-veined, abruptly contracted into winged or margined petioles which vary in length from 1 to 5 inches; the other cauline nearly similar but only narrowed at the base and seldom petioled; the upper very few and reduced in size. Heads middle-sized, about 30-flowered, loosely racemose on the slender naked branches, the summits of which are sometimes a little spreading or recurved. Pedicels slender. Rays linear-oblong, golden yellow.

22. *S. Terræ-Novæ:* stem erect, smooth, paniculate-corymbose and somewhat pubescent at the summit; leaves glabrous; the cauline lanceolate, tapering to the base, nearly entire; the lowest and radical spatulate-oblong, tapering into a margined petiole, somewhat serrate; racemes numerous, short, loose, forming a large expanding and mostly fastigiate compound panicle; heads (small] about 12-flowered; scales of the involucre glabrous, oblong-linear; rays 5–6, small; achenia nearly glabrous.

In bogs, Newfoundland, *Pylaie! Miss Brenton!* (in *herb. Hook.*)—Plant 1–2 feet high. Leaves smooth, minutely veiny; the lowest about 3 inches long, an inch wide near the apex, mostly obtuse; the uppermost narrow, entire. Panicle open, 4–5 inches broad at the summit; the paniculate irregular racemes more or less spreading, but not secund. Heads as large as in S. stricta; the scales of the involucre membranaceous and much narrower.—The specimen from Miss Brenton consists of the panicle, with only the summit of the stem, the former so much expanded that it was referred by Hooker to S. serotina: but it appears rather to belong to the present division.

23. *S. humilis* (Herb. Banks): glabrous; stem simple, erect; radical leaves oblanceolate or spatulate, obtuse, crenate-serrate at the apex, tapering into a petiole; the cauline lanceolate, acute, narrowed at the base; the uppermost linear and entire; raceme simple, or compound and paniculate, elongated, strict; scales of the involucre oblong (somewhat glutinous,) mostly obtuse; rays 6–8, short; achenia minutely canescent.—*Pursh! fl.* 2. *p.* 543; *Richards! appx. Frankl. journ. ed.* 2. *p.* 33; *Hook.! fl. Bor.-Am.* 2. *p.* 5; not of *Desf.* & *DC.* S. confertiflora, *Fisch. & Meyer, animad. bot. in ind. sem. St. Petersb.* 1840, *ex ann. sci. nat.* (*n. ser.*) 16. *p.* 59.

β. stem taller; heads more numerous, in short glomerate clusters disposed in a dense, somewhat interrupted, virgate spike or compound raceme.—S. stricta, *Hook.! l. c.*, partly.

Fort Albany, Hudson's Bay, and Newfoundland, *Herb. Banks!* Woody country between lat. 54° and 64°, *Richardson!* Limestone cliffs on the banks of the Onion River &c. Vermont, *Dr. Robbins!* β. Carlton House on the Saskatchawan &c. *Drummond!* Aug.–Sept.—Stem 6–15 inches high, nearly or quite glabrous, but more or less glutinous, as also the leaves in the fresh plant: the raceme simple and slender, or more or less compound; the branches strict; the middle-sized heads rather crowded, in β. much so. Leaves of a firm texture; the radical often coarsely toothed at the apex; the cauline about 2 inches long, 3–4 lines wide, serrulate above; the upper narrower and entire.—Differs from S. Virga-Aurea in its more rigid foliage, smaller heads, with the scales of the involucre more appressed, rigid, obtuse, and appearing somewhat glutinous.

24. *S. Virga-Aurea* (Linn.): stem erect, terete; cauline leaves lanceolate, tapering to each end, serrate; the lower elliptical, petioled; raceme

erect, simple or compound; scales of the involucre linear [or lanceolate], acute; rays about 8, elongated; achenia minutely pubescent. *DC.*—*Linn.! spec.* 2. *p.* 880; *Engl. bot. t.* 301; *Fl. Dan. t.* 663; *Hook.! fl. Bor.-Am.* 2. *p.* 5; *DC.! prodr.* 5. *p.* 338.

β. alpina (Bigel.! l. c.): stem 3–8 inches high, simple, glabrous or pubescent, bearing few (1–8) heads; scales of the involucre lanceolate, nearly glabrous; rays short; leaves oblanceolate, oblong-obovate, or spatulate.

γ. multiradiata: stem villous-pubescent, simple, or rarely branched at the summit; heads (large) in a dense thyrsoid or corymbose raceme; scales of the involucre narrow, nearly glabrous; rays 8–12; leaves ciliate, oblong-lanceolate (obtuse or acute), tapering to the base.—S. multiradiata, *Ait.! Kew. l. c. p.* 218; *Pursh! fl.* 2. *p.* 542; *Hook.! fl. Bor.-Am.* 2. *p.* 5; *E. Meyer, pl. Labrad. p.* 64; *DC. l. c.* S. Virgaurea, *Pursh, l. c.* S. corymbosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 328, not of *Ell.* (Varies, with the rays fewer and smaller. S. Virga-Aurea, *Hook. & Arn.! bot. Beechey, p.* 126. S. Virga-Aurea var. Arctica, *DC.! l. c.*)

Arctic America! and Labrador! to the Rocky Mountains! (in about lat. 54°) Unalaschka! Sledge Island! and Kotzebue's Sound! (*a.* & chiefly *γ.*) *β.* On the bare summits of the White Mountains of New Hampshire! and on Mount Marcy, Essex County, New York! Shore of Lake Superior, *Dr. Pitcher! Dr. Houghton!* Aug.–Sept.—A very variable species, which in this country is confined to the Northern regions, and the higher mountains of the Northern States. Nearly all the American specimens belong either to var. *β.*, which very nearly approaches the var. Cambrica of Europe, or to the var. *γ.*, which passes insensibly into other forms of this species, to which it should doubtless be united.

25. *S. thyrsoidea* (E. Meyer): stem erect or somewhat flexuous, simple, very glabrous, the summit and peduncles villous-pubescent; leaves glabrous, ovate, irregularly and sharply serrate, acute or acuminate, veiny, all except the upper cauline abruptly narrowed into very long petioles; the uppermost oblong-lanceolate, subsessile, often pubescent beneath; raceme oblong, simple or slightly compound; heads large; the peduncles mostly ebracteate; scales of the involucre nearly equal, lanceolate, acuminate, membranaceous, nearly glabrous; rays 8–10; achenia glabrous (slightly pubescent at the summit).—*E. Meyer, pl. Labrad. p.* 63; *DC. prodr.* 7. (*mant.*) *p.* 279. S. leiocarpa, *DC.! prodr.* 5. *p.* 339. S. multiradiata, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 328, not of *Ait.!* S. Virgaurea, *a. Bigel. fl. Bost. ed.* 2. *p.* 306.

Labrador, *Herzberg* (*E. Meyer*), *Kohlmeister!* (v. sp. in *herb. Schweinitz, herb. Collins, &c.*) Lower Canada, *Michaux! herb.* On the wooded sides of the White Mountains of New Hampshire, *Dr. Boott! Mr. Oakes! &c.* Killington Peak and Mansfield Mountains, Vermont, *Dr. Robbins!* Aug.–Sept.—Allied to S. Virga-Aurea (var. alpestris); but certainly a distinct species; remarkable for the abrupt and very long petioles of all but the uppermost cauline leaves (frequently two to three inches long, supporting a lamina about half that length, and an inch or more in breadth); for its larger heads, which perhaps are only exceeded by the following; and the glabrous achenia, upon which, however, a little hairiness is observable near the summit. The raceme commonly consists of 6 to 12 heads, on short and simple bractless peduncles from the axils of the upper leaves, &c., rather crowded: but one specimen from Labrador presents a large raceme more than 6 inches long, with nearly all the peduncles somewhat elongated and bearing 2 to 4 heads; the pedicels often longer than the heads, and furnished with a linear-subulate, scarious, deciduous bracteole. Rays rather short.—The species is well described by Meyer.

26. *S. glomerata* (Michx.): stem low, very simple; leaves glabrous, am-

ple, lanceolate, serrate; raceme simple, of axillary clusters, the uppermost capitate, crowded; involucre turgid, many-flowered. *Michx. fl.* 2. *p.* 117.

Mountains of Carolina, *Michaux.*—With much hesitation we join to this species a remarkable plant which we had called *S. macrantha*, collected in flower on the Roan Mountain by Mr. Curtis, and which is also abundant towards the summit of the Grandfather, N. Carolina (*Gray, in Sill. journ.* 42. *p.* 35); flowering in August. It is one to 2 feet high, with a stout striate-angular glabrous stem; with large, broadly lanceolate or obovate-lanceolate, glabrous leaves, 4–9 inches long, the lower 2–3 broad, ciliate especially towards the tapering entire base, serrate above with small sharp teeth, acuminate, veiny, of a firm but rather thin texture; the radical tapering into a winged petiole. Heads larger than those of S. rigida, 3–7 together in short racemes or clusters in the axils of the upper leaves, at first glomerate, but when expanded the pedicels (stout and pubescent, like the peduncles) are often as long as the heads; the lowest clusters somewhat remote, the others approximate, forming a narrow (sometimes thyrsoid) elongated panicle or compound raceme, mostly simple at the summit. Scales of the involucre imbricated in 3 or 4 series, 1-nerved, acutish; the exterior oblong-ovate, the innermost linear-lanceolate, nearly glabrous. Flowers 30–40 in each head; the rays 10–12, small in proportion. Achenia pubescent towards the summit, nearly glabrous below.—We know not what plant Nuttall had in view as the S. glomerata, of which he remarks (*Gen.* 2. *p.* 161): "Lower leaves broad oval and acuminate, serrate: nearly allied to Aster." Nor have we been able to ascertain the species mentioned by Schweinitz (in *Ell. sk.* 2. *p.* 387,) as "distinguished by its deep and close serratures, and the capitate form of the axillary racemes": the latter, however, is probably S. latifolia.

* * * *Heads in a compound corymb terminating the simple stem, showy: leaves feather-veined or 3-nerved.*—Corymbosæ.

† Scales of the involucre acute: achenia pubescent: leaves veiny.

27. *S. spithamæa* (M. A. Curtis! mss.): stem villous-pubescent, leafy; leaves oval or oblong-lanceolate, ciliate, nearly glabrous, sharply serrate above the middle, or the uppermost entire; the lowest and radical spatulate-oblong, tapering into winged petioles; heads (middle-sized) disposed in a compound glomerate corymb; peduncles and pedicels villous; scales of the involucre somewhat equal, lanceolate, ciliate; rays 6 or 7, short; achenia pubescent.—*Gray! in Sill. jour.* 42. *p.* 42.

Rocky places on the bald summit of the Roan Mountain, North Carolina (at an elevation of 6000 feet); where it was discovered, in 1835, by *Mr. Curtis!* Aug.–Sept.—Stems 8–10 inches high, growing in tufts from a branching caudex. Leaves membranaceous, 1–3 inches long, rarely an inch in width, irregularly and sometimes incisely serrate; the uppermost acute; the lower conspicuously ciliate along the entire narrowed base. Heads 25–30-flowered. Scales of the somewhat hemispherical involucre appressed, 1-nerved, slightly carinate, with scarious minutely lacerate-ciliate margins, acute or acuminate; the outer broadly, the inner narrowly lanceolate. Rays scarcely exserted.

† † Scales of the involucre very obtuse: achenia glabrous: leaves mostly feather-veined from a strong midrib: rays several.

28. *S. rigida* (Linn.): scabrous-pubescent, somewhat hoary; stem stout; the short compact racemes corymbose at the summit; leaves rigid; the lower mostly oval or oblong, serrate, petioled; the others ovate-oblong, closely sessile, slightly clasping; the uppermost entire; heads (very large)

about 34-flowered, crowded.—*Linn. spec.* 1. *p.* 880; *Ait.! Kew.* (*ed.* 1) 3. *p.* 216; *Michx.! fl.* 2. *p.* 118; *Pursh! fl.* 2. *p.* 543; *Ell.! sk.* 2. *p.* 390; *Hook.! fl. Bor.-Am.* 2. *p.* 5; *DC. prodr.* 5. *p.* 337. S. grandiflora, *Raf. in med. repos.* (*hex.* 2) 5. *p.* 359. Virga-Aurea Novæ-Angliæ, *Herm. parad. t.* 243. (poor.)

Dry soil, from Connecticut! New York! and Pennsylvania! to North Carolina! &c. along the mountains; and from Saskatchawan, Michigan! and Missouri! to Arkansas! and Texas! Aug.–Oct.—Stem 3–4 feet high, stout and rigid, clothed with a rough pubescence. Leaves thick, clothed with a minute and somewhat hoary pubescence, scabrous, or often rather soft or velvety beneath, more or less serrate with fine mostly appressed or somewhat crenate teeth; the radical ones 4 to 9 inches long, on petioles about the same length; the upper cauline reduced to 1–2 inches in length, broadly oval or ovate-oblong. Heads among the largest and most showy of the genus. Scales of the involucre oblong, very obtuse, slightly striate, pubescent or almost glabrous. Rays large, oblong, 7–10. Achenia very glabrous.

29. *S. corymbosa* (Ell.): stem stout, glabrous; the corymbose branches and short racemes hirsute-pubescent; leaves (cauline) oblong-lanceolate, closely sessile, rigid, glabrous, with minutely ciliate and very scabrous margins, mostly serrulate: heads (large) in short and loose fastigiate racemes, about 30-flowered.—*Ell.! sk.* 2. *p.* 378.

In the middle districts of Georgia, *Elliott!* Sept.–Oct.—"Stem 4–6 feet high, robust and virgately erect, branching near the summit, the young branches hirsute." *Ell.* Radical leaves unknown; the lower cauline 4–6 inches long, about an inch wide, coriaceous, the margin rough with close fine hairs; the upper similar but gradually reduced in size to about an inch in length, rather crowded, somewhat acute; the younger more ciliate, and the lower surface sometimes furnished with scattered hairs. Heads smaller than in S. rigida, but about twice the size of those of the following species, on rather slender bracteolate pedicels, disposed in loose short racemes terminating the corymbose branches, those of the lower or exterior racemes unilateral and recurved-spreading. Involucre minutely pubescent, similar to that of S. rigida. Rays about 10, rather large. Achenia perfectly glabrous. Pappus as long as the corolla of the disk. Doubtless distinct from the preceding, if the stem is constantly smooth. What is S. corymbosa, *Poir. suppl.*, of unknown origin, with rough crenate-toothed leaves?

30. *S. Ohioensis* (Riddell): very smooth and glabrous; stem strict, fastigiate-corymbose at the summit; radical and lowest cauline leaves lanceolate-oblong, obtuse, with ciliolate-scabrous margins, finely serrate towards the apex, tapering into slender petioles; the others oblong-lanceolate, closely sessile, mostly entire; heads (rather small) numerous, in a compound corymb, on slender glabrous pedicels, 16–20-flowered; pappus shorter than the corolla of the disk.—*Riddell! synops. fl. Western States, p.* 57.

Wet grassy prairies of Ohio, *Mr. Van Cleve! Dr. Riddell!* and of Indiana, *Mr. Lea!* Also in various parts of Western New York, *Dr. Sartwell! Dr. Knieskern! Mr. G. W. Clinton!* Sept.–Oct.—Plant 2–3 feet high, perfectly smooth, except the margins of the leaves; with a simple virgate stem, which is divided at the summit into a compound fastigiate corymb; the oblong heads all erect, and on slender pedicels. Leaves of a rather firm texture; the radical 5–8 inches long, an inch or an inch and a half in breadth, with petioles often about the same length; the cauline successively reduced in size (the uppermost about an inch long), rather crowded, erect. Scales of the narrow involucre 8–10, oblong, obtuse. Rays 6–7, small. Pappus scarcely longer than the perfectly glabrous achenia.

31. *S. Riddellii* (Frank): stem stout, glabrous, corymbose at the summit, the branches and pedicels pulverulent-pubescent; leaves lanceolate, elongated, acute, entire, glabrous, with scabrous margins, obscurely nerved; the radical on long carinate petioles; the cauline partly clasping or sheathing, carinate-conduplicate, mostly arcuate; heads (middle-sized) very numerous, clustered, forming a compound fastigiate corymb, 20–24-flowered.—*Frank! in Riddell, synops. l. c.* S. Mexicana β. floribus lato-corymbosis, *Hook.! compan. to bot. mag.* 1. *p.* 97.

Wet and grassy prairies, Ohio, *Dr. Riddell! Mr. Van Cleve! Dr. Paddock! Mr. Lea!* St. Louis, Missouri, *Drummond! Dr. Engelmann!* and on St. Peter's River, *Mr. Nicollet!* Wisconsin, *Mr. Lapham!* Sept.–Oct.—Stem about 2 feet high, very leafy to the summit. Leaves with a rather strong midrib, and 1 to 3 more or less distinct parallel nerves, forming numerous reticulations with the minute and close veinlets, thin but rather firm in texture; the radical a foot or more in length, including the elongated petioles, into which the limb (6–9 lines wide in the middle) is gradually attenuated, often falcate; the cauline 4–8 inches long, about half an inch wide, erect, appressed and partly sheathing at the base, above arcuate-spreading or recurved. Heads rather larger than in the preceding, much crowded on the branches of the large compound corymb, usually on short pubescent pedicels. Scales of the involucre narrowly oblong, 1-nerved, nearly glabrous. Rays 7–9, small and narrow. Achenia glabrous, or slightly and sparsely pubescent under a lens.—A beautiful and very distinct species, allied to the preceding.

† † † Scales of the involucre obtuse: achenia glabrous: leaves nerved: rays 2–3.

32. *S. nitida:* stem strict, very smooth below, fastigiate-corymbose at the summit; the branches and pedicels scabrous-pubescent; leaves rigid, very smooth and shining, nerved, lanceolate or linear, entire, acute, the margins ciliolate-scabrous towards the apex; the radical and lowest cauline tapering into short petioles; the others sessile; heads (middle-sized) in loose fastigiate corymbs, about 14-flowered.

Dry pine woods &c., Western Louisiana, *Dr. Leavenworth! Dr. Hale!* and Texas, *Drummond! Dr. Leavenworth!* Aug.–Oct.—Stem 2–3 feet high, slender or rather stout, simple, and terminated by a single fastigiate corymb, or somewhat branched near the summit; the branches rigid, erect, fastigiate, clothed with a short rough pubescence. Leaves varying from linear to rather broadly lanceolate, coriaceous, both surfaces very smooth and shining (the margins also smooth towards the base), rarely with one or two obscure serratures near the apex, furnished with 1 to 3 nerves or parallel veins on each side of the rather strong midrib; the radical and lowest cauline 4–8 inches long, 3–5 lines wide; the upper gradually reduced in size, numerous, spreading, sessile, but mostly narrowed at the base. Scales of the involucre nearly glabrous, oval, very obtuse. Rays 2–3, large. Achenia perfectly glabrous.—The leaves vary in width in different specimens from 2–3 lines to three-fourths of an inch. The plant exudes small quantities of resin when wounded.

33. *S. pumila:* stems several from a woody caudex, scarcely longer than the radical leaves, simple, augular; leaves rigid, lanceolate, entire, tapering to each end, mucronate-acute, smooth, somewhat glutinous, strongly 3-nerved; the radical petioled; heads (large for the size of the plant) in sessile clusters of 3–4 together, disposed in a small corymb; scales of the somewhat viscid and cylindrical involucre oval or oblong, carinate; rays 2–3, short; the disk-flowers about the same number.—Chrysoma pumila, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 325.

Open situations, on shelving rocks towards the western declivity of the Rocky Mountains [about lat. 41°], *Nuttall!*—Plant about a span high, in clusters from the same root. Leaves (persistent?) with somewhat scabrous margins, slightly veiny between the ribs. Scales of the involucre with scarious margins, obscurely mucronate.

* * * * *Natives of brackish swamps: racemes erect or spreading, paniculate: leaves thickish or fleshy, very smooth and entire, obscurely veiny, often somewhat triplinerved.* —Maritimæ.

34. *S. Mexicana* (Linn.): stem oblique, glabrous; leaves lanceolate, somewhat fleshy, very entire, smooth throughout; racemes paniculate, erect; peduncles squamose, glabrous; rays elongated, *Ait.—Linn.! hort. Cliff. p.* 409, *& spec.* 2. *p.* 879; *Ait.! Kew.* (*ed.* 1) 3. *p.* 215; excl. syn. *Tourn. Pluk. & Dodart.*, fide *Swartz, obs. p.* 306; *H. B. & K.! nov. gen. & spec.* 4. *p.* 104. S. limonifolia, *Pers. syn.* 2. *p.* 449, at least as to the character.

Described from specimens introduced into European gardens more than two hundred years ago, at first of reputed Mexican origin; but afterwards supposed to be a native of this country and not of Mexico; whence Persoon changed the name, and succeeding botanists have partially confounded it with the following species. It was most probably derived either from Mexico or the West Indies; since we have seen no native specimens of the United States which accord with the Linnæan plant, while the species of Humboldt does so: it is moreover given as a West Indian species by Swartz, who, by excluding the synonyms adduced by Linnæus, appears to have been aware that his plant was distinct from the more northern one; and in the Hortus Kewensis (where the plant is well characterized), a reference is made to the manuscripts of Sir Hans Sloane.—The heads are in small corymbose panicles, crowded at the summit of the stem, and in the axils of the obtuse upper leaves; the peduncles leafy; the pedicels with numerous subulate bracts, passing into the scales of the involucre, which are more pointed than in S. sempervirens. It should probably be excluded from the flora of extratropical North America; unless, indeed, the variety of S. limonifolia mentioned by Nuttall (*trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 328), as a native of the Californian coast, near St. Barbara, should be found to belong to this species.

35. *S. sempervirens* (Linn.): stem erect, glabrous; leaves fleshy, lanceolate, entire, acute, sessile, slightly clasping, obscurely triplinerved; the radical lanceolate-oblong, on elongated petioles; racemes paniculate (simple or compound), more or less secund and spreading; peduncles pubescent or nearly glabrous.—*Linn.! spec.* 2. *p.* 878; *Pursh, fl.* 2. *p.* 538; *Ell.! sk.* 2. *p.* 379; *DC.! prodr.* 5. *p.* 335. S. Noveboracensis & S. carnosa, *Mill. dict.* Virga-Aurea seu Solidago procerior, &c. *Pluk. alm. t.* 235, *f.* 5?

β. leaves thick and fleshy; racemes short, in a contracted panicle, more or less secund or turned to one side.—Virga-Aurea limoniifolio, &c. *Tourn. inst. p.* 404? *Pluk. alm. t.* 235, *f.* 2? Solidago lævigata, *Ait.! Kew.* (*ed.* 1) 3. *p.* 215; *Pursh, fl.* 2. *p.* 541; *DC. l. c.* S. limonifolia, *Pers.? and of authors.*

γ. leaves linear-lanceolate, tapering to each end, very acute, thickish; racemes erect, in a pyramidal rather strict panicle.—S. sempervirens, *Ait.! l. c.*

δ. leaves scarcely, or not at all fleshy, elongated lanceolate, tapering to each end, very acute; racemes short, mostly secund, in a close erect or somewhat decurved panicle.—S. viminea, *Ait.! Kew. l. c. p.* 215. S. integerrima, *Mill. dict.*, ex *Ait.*

In salt or brackish marshes along the coast of the United States! to Massachusetts! and Canada. Sept.–Oct.—Stem stout, 3–8 feet high. Margin of the leaves sometimes scabrous. Heads large. Rays 8–10. Achenia, as in all the species of this section, somewhat pubescent.—We have possibly combined two or more species; but the form of the panicle, &c. is very variable, and the fleshiness of the leaves probaby varies with the saltness of the marsh; becoming almost membranaceous, as in var. δ., when the water is nearly fresh.

36. S. *angustifolia* (Ell.): very glabrous; stem erect, strict, simple, or sometimes branched at the summit; leaves thick, short, erect, lanceolate-linear, sessile, mucronate-acute, 1-nerved; the lower lanceolate, attenuate at the base; racemes short, erect or at length somewhat recurved, sometimes secund, disposed in a close and virgate erect panicle; peduncles and pedicels slender; heads small.—*Ell.! sk.* 2. *p.* 388; *DC.! prodr.* 5. *p.* 341.

In brackish swamps, Carolina! to Florida! Texas, *Drummond!* Sept.–Oct.—Plant with somewhat the habit of S. virgata. Stem 2–4 feet high, simple and virgate, or producing slender branches near the summit, and terminated by a contracted crowded panicle; the very numerous heads smaller, and the scales of the involucre narrower than in the preceding species. Upper leaves about an inch long, often subulate; the lower more scattered, less pointed, sometimes broadly lanceolate.—The leaves in the Texan specimens are more appressed.

37. *S. integrifolia* (Desf.): stem erect, simple, somewhat pubescent; leaves lanceolate, sessile, acuminate, slightly and obsoletely triplinerved, glabrous, entire, the lowest [rather obtuse] sparsely denticulate; racemes axillary, erect, somewhat panicled [forming an elongated rather large panicle]; pedicels pubescent; scales of the involucre acute; rays elongated. *DC.* —"*Desf.! cat. hort. Par. ed.* 1804, *p.* 103, *& ed.* 3. *p.* 402"; *Pers. syn.* 2. *p.* 449; *DC.! prodr.* 5. *p.* 340. (excl. syn. S. speciosa, *Nutt.*) S. elata, *Pursh, fl.* 2. *p.* 543, partly (spec. cult. *Soland.! in herb. Banks.*); not of *Ell.*

"North America."—We have only seen cultivated specimens, the origin of which is uncertain. The summit of the stem, peduncles, &c. are pubescent; the heads large; and the achenia pubescent.

* * * * * *Racemes spreading or recurved* (*scorpioid*), *secund: leaves veiny* (*sometimes indistinctly triplinerved*), *usually serrate.*—Secundifloræ.

† Leaves usually ample, serrate, loosely feather-veined; one of the veins on each side of the midrib sometimes stronger than the others, thus appearing slightly triplinerved: heads middle-sized.

38. *S. elliptica* (Ait.): stem erect, glabrous; leaves elliptical, smooth, serrate; racemes paniculate, secund; rays middle-sized, [peduncles and pedicels minutely pubescent; scales of the involucre narrow, acute; achenia strigose-pubescent]. *Ait.! Kew.* (*ed.* 1) 3. *p.* 214; not of *Ell.*, nor of *DC.?* S. latissimifolia, *Mill. dict.*, ex *Ait.* S. dubia, *Scopoli, fl. insub.* 2. *p.* 19, *t.* 10?

North America, *Hort. Kew.* Canada, *Mill. dict.*, in which the subjoined particulars are given.—"Stalks stiff, round, smooth, with a white bark, upwards of 3 feet high. Leaves spear-shaped, smooth, with several veins, 3½ inches long, one inch broad, alternate. Flowers from the upper axils, in short, erect, obtuse spikes, of a pale yellow color."—The characters we have added to the phrase of the Hortus Kewensis are derived from the authentic specimen, preserved in the Banksian herbarium. It is somewhat allied to the maritime species; and the same plant, if we mistake not, is found along the borders of salt marshes near New York. The latter has thickish, shining, oblong-lanceolate leaves, veiny, smooth, with scabrous margins, the upper closely sessile and mostly entire; the short and dense racemes forming a crowded and leafy pyramidal panicle. Heads middle-sized. Rays 10–12.

39. *S. neglecta:* stem stout, smooth; leaves thickish, smooth and glabrous; the radical and lowest cauline oblong or ovate-lanceolate, appressed-serrate, petioled; the others elliptical or oblong-lanceolate, mostly acute at each end, sessile (often obscurely triplinerved) finely appressed-serrate; the upper entire; racemes short, dense, secund, somewhat spreading, disposed in an elongated or pyramidal somewhat leafy panicle; peduncles and pedicels nearly glabrous; scales of the 8–12-flowered involucre oblong, obtuse; rays rather large; achenia nearly glabrous.

In swamps, Massachusetts! and New York! to ~~North Carolina! and~~ Indiana! Aug.–Sept.—This not uncommon Solidago has doubtless been noticed; but we cannot refer it, with reasonable probability, to any described species. It is distinguished from S. arguta by its elongated panicle, with short racemes, which are at first erect (the lower often shorter than the leaves which subtend them); by the larger heads with much fewer flowers, &c.: from S. Muhlenbergii by the more entire and rigid, seldom acuminate leaves, more strict and terete stem, fewer-flowered heads, &c.: from S. elliptica by the broad and obtuse scales of the involucre (which are pubescent-ciliate at the tips), and the smooth achenia. The primordial radical leaves are oblanceolate or narrowly oblong, finely crenate-serrate, often obtuse, tapering into slender petioles; which are frequently succeeded by larger acuminate radical leaves, resembling those of S. arguta, but less strongly serrate. Several varieties occur; as 1, with coriaceous leaves, deep green above, the margins scarcely scabrous; the panicle either small and strict, or large and loose, with many of the lower racemes often shorter than the leaves (Can this be S. verrucosa, *Schrad.?*), or sometimes compound from the stem producing corymbose branches at the summit (this is possibly the S. dubia, *Scopoli*, *Smith*, the S. Cleliæ, *DC.*): 2, leaves less rigid, with very scabrous margins, the cauline elliptical or oblong-lanceolate, short, more entire; panicle large and often crowded: 3, leaves longer and narrower, often triplinerved above the middle; sometimes sharply serrate; and 4, if we mistake not, with the leaves slightly scabrous. Sometimes the racemes are erect, at least until old, and but slightly secund, approaching S. stricta.

40. *S. patula* (Muhl.): stem angled and striate, smooth, usually branched above; leaves (large) elliptical, acute, serrate, entirely smooth and glabrous beneath; racemes mostly short and crowded on the elongated somewhat leafy branches, at length spreading or recurved; peduncles scabrous-pubescent; scales of the involucre oblong; rays 6 or 7, the disk-flowers 8–10; achenia sparsely and minutely pubescent.—*Muhl.! in Willd. spec.* 3. *p.* 2059; *Beck. bot. p.* 190; *Darlingt.! fl. Cest. p.* 457. S. asperata, (*herb. Banks., mss.*) *Pursh, fl.* 2. *p.* 538; *Hook.! fl. Bor.-Am.* 2. *p.* 3. S. angulata, *Schrad. in DC. prodr.* 5. *p.* 331?

β. strictula: stem simple or nearly so; the very short racemes, at first erect and scarcely secund, constituting a virgate compound raceme; upper leaves small.—S. salicina, *Ell. sk.* 2. *p.* 389. S. scabra, *Hook.! compan. to bot. mag.* 1 *p.* 97.

Swamps, meadows, and moist woods, Canada, Massachusetts! New York! and Wisconsin! to Georgia! and Louisiana! (not uncommon.) *β.* North Carolina! to Florida! and Louisiana! Aug.–Sept.—This species is readily distinguished by the shagreen-like roughness of the upper surface of the ample somewhat coriaceous leaves, and their livid or leaden hue, especially in dried specimens; while the pale lower surface is perfectly smooth (a character pointed out by Dr. Darlington, but unaccountably omitted by Willdenow, although mentioned by Muhlenberg in his mss. Flora Lancastriensis); and also by the strongly-angled stem, and the pretty large heads disposed in short racemes on the spreading branches. Sometimes the stem is simple, with the short and crowded racemes at first erect, and scarcely secund when old. The leaves are rather finely serrate, coarsely veined, the veins conspicuous on the lower surface; the radical often 6 inches long and 3–4 broad, abruptly narrowed into a winged petiole; the lower cauline nearly similar, narrowed at the base, or contracted into a short winged petiole; the upper successively smaller and more closely sessile, lanceolate-oblong, acute or sometimes obtuse. When it grows in deep shade, the leaves become more membranaceous and less scabrous.

41. *S. arguta* (Ait.): smooth and glabrous throughout, except the minutely ciliate margins of the leaves; stem strict; radical and lower cauline leaves large, elliptical or lanceolate-oval, veiny, sharply serrate, with spreading teeth, acuminate, tapering into winged and ciliate petioles; the others lanceolate or oblong, somewhat triplinerved, tapering to each end, sessile, serrate, the uppermost entire; racemes dense, at length elongated and recurved, forming a crowded corymbose panicle; scales of the involucre appressed; rays 8–12, small, the disk-flowers about 10; achenia scarcely pubescent.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 313; *Pursh, fl.* 2. *p.* 538; (*Ell. sk.* 2. *p.* 374?) *DC. prodr.* 5. *p.* 333; not of *Muhl.*, *Darlingt.*, *&c.* S. ciliaris, *Muhl.! in Willd. spec.* 3. *p.* 2056; *Darlingt.! fl. Cest. p.* 455; *DC. prodr.* 5. *p.* 331. S. argentea, *Hornem. suppl.*, ex *DC.*

β. juncea: lower leaves narrower and less deeply serrate, the upper more entire.—S. juncea, *Ait.! Kew. l. c.; Pursh, l. c.; Hook.! fl. Bor.-Am.* 2. *p.* 3; not of *Ell.*, nor of *DC.*

γ. scabrella: leaves, especially the lower, scabrous or roughish-pubescent, at least beneath; racemes somewhat pubescent.

Meadows, fields, &c. either in dry or moist places. *α.* & *β.* Canada (from Subarctic America, *Richardson!*) and throughout the Northern and Western States! to South Carolina! *γ.* Barrens of Indiana, *Dr. Clapp!* Marshes around Louisville, Kentucky, *Dr. Short!* Wisconsin, *Mr. Lapham!* Aug.–Sept.—A rather stout species, 2–4 feet high, apparently well distinguished by the very numerous heads, mostly smaller than in any of its allies, compactly disposed in long, at length recurved racemes, which form an ample and dense fastigiate-corymbose panicle; by the much appressed and rigid somewhat carinate scales of the involucre (the exterior ovate-oblong); the small rays; glabrous branches of the inflorescence, with the bracts usually ciliate, &c. The radical and lower leaves are frequently very large, ovate-oblong or elliptical, and sharply and coarsely serrate; this form is the S. arguta of Aiton, according to specimens compared by Dr. Boott, &c.: when they are narrower and less coarsely serrate, it is the S. juncea, *Ait.*, &c. The young achenia are more or less pubescent under a lens; but when mature they are almost glabrous.

41. *S. Muhlenbergii:* stem angled, glabrous; leaves (large and thin) smooth and glabrous both sides, very sharply and strongly serrate; the radical ovate, on winged (naked or ciliate) petioles; the cauline elliptical-lanceolate, strongly acuminate, tapering into a narrow base or margined petiole; the uppermost somewhat entire; racemes pubescent, short, spreading, disposed in an elongated open panicle; scales of the involucre oblong-linear; rays 6–7, large; the disk-flowers about 12; achenia glabrous.—S. arguta, *Muhl.! fl. Lancast. ined.*, *& herb.*; *Darlingt.! fl. Cest. p.* 458; not of *Ait.*, nor of *Ell.* (ex char.)

Low or shady grounds, Massachusetts! Vermont! New York! and Pennsylvania! Aug.–Sept.—Stem 2–3 feet high, simple, or branched at the summit. Leaves very sharply and often doubly serrate with narrow teeth, as in those of S. latifolia, which they somewhat resemble, the acuminate base and apex mostly entire. Panicle often simple at the summit; the lateral branches or racemes mostly short, more or less secund, but seldom recurved: the heads crowded, larger than in S. arguta, and as large as in S. speciosa; the rays also pretty large.—This plant best deserves the name of S. arguta, for which Muhlenberg and Darlington have taken it: but the original species of that name appears to be the S. ciliaris of these authors. It is said to resemble the S. ambigua, in which species the racemes are not secund, and the achenia are almost villous.

43. *S. Boottii* (Hook.): stem usually branching; radical and lowest cauline leaves ovate or oblong-lanceolate, serrate, on slender margined petioles; the others lanceolate or ovate-lanceolate, appressed-serrate (or the upper entire), acuminate at both ends, or contracted into a winged petiole; racemes loosely paniculate, elongated; scales of the involucre narrowly oblong, obtuse; rays 2–5; the disk-flowers 8–12; achenia minutely pubescent.

α. stem slender, glabrous; the lax spreading branches pubescent, bearing (few or solitary) rather loose secund racemes; leaves glabrous, with scabrous margins, the upper entire.—S. Boottii, *Hook.! compan. to bot. mag.* 1. *p.* 97, (the specimens destitute of the lower leaves, &c.)

β. stem slender, glabrous; racemes very loose, paniculate; lower leaves somewhat pubescent, or sometimes nearly all scabrous-pubescent on both sides.

γ. stem and both surfaces of the leaves scabrous-pubescent; branches slender, bearing rather loose and often simple racemes.

δ. glabrous, except the branches; stem stouter; leaves attenuate-acuminate at both ends, often very sharply serrate; racemes rather dense, secund, recurved, forming a sparse terminal panicle.—S. juncea? *Ell.! sk.* 2. *p.* 375, not of *Ait.*

ε.? glabrous; stem stout; leaves rigid, oblong, less acuminate, the lower serrate with spreading teeth; racemes dense, very numerous, forming an ample compound panicle.

Sandy fields and woods, North Carolina! to Florida! and Louisiana! *α*. Louisiana, *Drummond!* Florida, *Dr. Leavenworth!* *β*. Louisiana, *Dr. Leavenworth! Dr. Hale!* *γ*. Georgia, *Dr. Boykin!* *δ*. Southern States! apparently common. *ε*. Louisiana, *Dr. Leavenworth! Dr. Hale!* Texas, *Drummond.!* Aug.–Oct.—Variable in many respects, yet apparently a well marked species, 2–5 feet high, with rather large heads: when the latter are loose, the pedicels are furnished with several subulate bracts.

44. *S. gracillima:* smooth and glabrous throughout; stem virgate, branched towards the summit; the branches strict, very long and slender, leafy, terminated by single virgate secund racemes with the apex somewhat recurved, sometimes compound at the base; leaves narrowly spatulate-linear, rather obtuse, tapering to the base, with ciliolate-scabrous margins, entire, the lowermost sparingly serrate; scales of the involucre narrowly oblong, obtuse; rays mostly wanting; achenia pubescent.

Middle Florida, *Dr. Chapman!*—Stem 2–3 feet high, terete, strict and slender. Leaves rather rigid; the lowest 3–4 inches long, and about half an inch wide towards the apex, oblanceolate, with a gradually attenuate base or winged petiole, and a rather strong mid-nerve, obsoletely triplinerved above the middle, the veinlets obscure, usually somewhat serrate; the others entire and gradually reduced in size, linear with a narrowed base; those of the branches numerous, about an inch long, scarcely a line in width. Racemes virgate, 3–5 inches long, terminating the numerous branches; the broadly obconic heads entirely unilateral, large in proportion (as large as in S. Boottii), crowded, on very short pedicels: the summit of the main stem often producing a virgate panicle; the lateral racemes short and spreading. Disk-flowers 10–14: rays none, or very rarely solitary (3-toothed), in the specimens examined.

45. *S. linoides* (Soland. in herb. Banks.): smooth and glabrous; stem slender, simple; leaves lanceolate, finely appressed-serrate, with ciliolate-scabrous margins; the radical and lower cauline acute or acuminate at both ends, on slender ciliate petioles; the upper often oblong, sometimes entire; panicle small, turned to one side (rarely compound), the short racemes at length open, secund; scales of the involucre oblong-linear, obtuse, appressed; rays 1–3, short, the disk-flowers 4–5; achenia glabrous.—Bigelovia? uniligulata, *DC.! prodr.* 5. *p.* 329, excl. syn. Chrysoma uniligulata, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 325. Solidago uliginosa, partly, *Nutt.! in jour. acad. Philad.* 7. *p.* 101.

Sphagnous swamps of Wading River, &c. in the pine barrens of New Jersey! Near Boston, *Mr. Greene!* (in *herb. Hook.*) Sept.–Oct.—A slender plant, 12 to 20 inches high; with a panicle only 3 or 4 inches long, somewhat contracted, usually turned to one side; the short and rather crowded racemes at length spreading or somewhat recurved; heads small. Radical and lowest cauline leaves 2–5 inches long, tapering into a petiole about the same length, half an inch wide; the upper gradually reduced in size, less tapering, sessile. Achenia often with a few minute scattered hairs when young.—Somewhat allied to S. virgata, and especially to S. stricta: it is a more slender plant than the latter, with a different inflorescence, and fewer flowers. The ray is frequently reduced to a single flower, and those of the disk to four; but we quite as commonly find 2 to 4 rays (in the specimens from which De Candolle was supplied), showing the little consequence that can be attached to this character: nearly every section of Solidago presents species with only one or two rays.—We have adopted the name which, according to Dr. Boott, was applied to this species by Solander. This and S. stricta appear to have been more or less confounded by Nuttall under his S. uliginosa; Dr. Pickering's specimens from "sphagnous swamps and marshy thickets in Massachusetts," preserved in the herbarium of the Academy of Natural Sciences, belonging entirely to S. stricta; while others from *New Jersey* belong to the present species.

† † **Leaves (small) serrate, copiously feather-veined, the veinlets conspicuously reticulated: heads small.**

46. *S. altissima* (Linn.): stem hirsute with rough hairs; leaves ovate-lanceolate or oblong-lanceolate, acute at each end or acuminate, sessile, coarsely serrate with sharp and unequal spreading teeth, strongly feather-veined and more or less reticulated, often rugose, scabrous above, hirsute on the veins beneath; racemes paniculate, secund (ascending or recurved); scales of the involucre linear; rays 6–9, small; the disk-flowers 4–7; achenia pubescent.—*Linn. spec.* 2. *p.* 878; *Ait.! Kew.* (*ed.* 1) 3. *p.* 212; *Willd. spec.* 3. *p.* 2058; *Bigel. fl. Bost. ed.* 2. *p.* 305; *Hook.! fl. Bor.-Am.* 2. *p.* 2; *Darlingt.! fl. Cest. p.* 456. (Virga-Aurea spec. *Dill. Elth. f.* 391, 392, *&* 393.) (S. altissima, pilosa, recurvata, & Virginiana, *Mill. dict.* S. altissima, aspera, rugosa, & villosa, *Pursh, fl.* 2. *p.* 536. S. altissima, aspera, rugosa, & humilis, *DC.! prodr.* 5. *p.* 333. *&c.*)

β. stem villous; leaves thin, strongly and sharply serrate, often nearly smooth and glabrous above, and rather softly hairy on the veins beneath.—S. altissima *β. Ait. l. c.* S. villosa, (*Herb. Banks!*) *Pursh! fl.* 2. *p.* 537; *Hook.! fl. Bor.-Am.* 2. *p.* 2; not of *DC.*—Varies, with the racemes at first erect, at length recurved. S. humilis, *Desf.! cat. hort. Par. ed.* 3. *p.* 402; *DC.! prodr.* 5. *p.* 336; not of *Pursh.*

γ. stem scabrous-pubescent or somewhat hirsute; leaves serrate with appressed teeth, varying from ovate-oblong to lanceolate (the uppermost not narrowed at the base), reticulated, mostly rugose.—Virga-Aurea Novæ Angliæ rugosis foliis crenatis, *Dill. Elth. t.* 308, *f.* 396. Solidago rugosa, *Mill.; Willd. spec.* 3. *p.* 2058; *Ait. Kew.* (*ed.* 2) 5. *p.* 66; *Pursh! fl.* 2.

p. 537; *Ell.! sk.* 2. *p.* 574; *Hook.! l. c.* (Varies, with the stem hirsute, as in *icon. Dill.*, and in S. ulmifolia, *Ell.! sk.* 2. *p.* 373 (spec. ex *Muhl.!*), not of *Muhl. herb.* or *Willd.*; or scabrous with a short pubescence; with the leaves either very scabrous, or almost smooth and glabrous; the lowermost frequently serrate with sharp salient teeth, as in var. *α*.

δ. leaves elliptical or oblong-ovate, short, crenate-serrate, very strongly rugose, scabrous above; the lower surface, with the stem, pubescent with close rather soft hairs.

ε. leaves ovate-elliptical or oblong, serrate with small and sharp mostly appressed teeth, somewhat rugose, very scabrous above, scabrous-pubescent beneath.—Virga-Aurea aspera, &c. *Dill. Elth. t.* 305, *f.* 392. Solidago aspera, *Ait.! Kew.* (*ed* 1) 3. *p.* 212; *Willd. l. c.*; *Muhl.! cat. p.* 79; *Ell.! sk.* 2. *p.* 371. S. scabra, *Nutt.*; *DC. l. c.?* not of *Muhl.*

Borders of fields and thickets, mostly in low or rich ground, Canada! Newfoundland! & Labrador! (chiefly var. *β*.) and nearly throughout the United States! very common. *δ*. Louisiana, *Drummond! Dr. Ingalls! Dr. Leavenworth!* *ε*. Pennsylvania, *Muhlenberg!* to Georgia, *Dr. Boykin!* Aug.–Oct.—One of the most common *Golden-Rods*, exhibiting a great variety of forms; of which we have only characterized the more striking. A correct view of the species, we think, is taken in the first edition of the Hortus Kewensis. We are in doubt as to the plant originally intended by Linnæus, but the synonyms adduced, at least those of Dillenius, belong to this species. The specific name is not always appropriate: the plant varies from 2 or 3 to 6 or 7 feet in height.

47. *S. ulmifolia* (Muhl.): stem smooth and glabrous, the branches hairy; leaves membranaceous, elliptic-ovate or oblong-lanceolate, sessile, tapering to the base, acuminate, coarsely and unequally serrate (the uppermost entire), loosely veined, smooth above, softly hairy beneath, especially the midrib and margins; racemes paniculate, recurved-spreading; scales of the involucre lanceolate-oblong; rays about 4, short; achenia minutely pubescent.—*Muhl.! in Willd. spec.* 3. *p.* 2060; *Pursh, fl.* 2. *p.* 538; *Darlingt.! fl. Cest. p.* 457; *DC. prodr.* 5. *p.* 333 (ex char.); not of *Ell.*

Woods and low grounds, Northern and Western States! and along the upper country to Alabama! Aug.–Sept.—Resembles some states of the preceding species; but the striate stem is glabrous, or with scattered soft hairs, and the thin leaves are softly pubescent or villous beneath, and either glabrous or sparsely hairy above, &c.: the radical leaves are elliptic-ovate, with winged petioles. The specific name is not appropriate, but this is the plant described by Willdenow, and of Muhlenberg's herbarium, yet not the one sent by the latter to Elliott.

48. *S. Drummondii:* stem and lower surface of the leaves, especially the veins, minutely velvety-pubescent; leaves ovate or broadly oval, acute at each end, almost petioled, sharply serrate, veiny, somewhat triplinerved, smooth and slightly pubescent on the veins above; those of the branches entire; racemes secund, paniculate; scales of the involucre oblong, obtuse; rays 4–5, small; the disk-flowers 5 or 6; achenia pubescent.—"S. ulmifolia, *Ell.?*" *Hook.! compan. to bot. mag.* 1. *p.* 97.

St. Louis, Missouri, *Drummond!* Louisiana, *Dr. Leavenworth!*—Upper part of the stem (the lower portion not seen), with the branches and peduncles, clothed with a fine and close velvety pubescence, leafy to the summit. Leaves 2 inches or more in length, about an inch and a half wide, of a rather firm texture; abruptly acute at both ends, appearing slightly petioled, strongly serrate; the younger slightly pubescent above; those of the branches small, often obtuse, Heads nearly as large as in S. altissima. Involucre nearly glabrous. Pappus rather shorter than the corolla of the disk-flowers.

49. *S. amplexicaulis* (Martens?): stem velvety-pubescent, loosely branched above; leaves (thin) very veiny and reticulated, softly pubescent beneath, scabrous above, serrate, acute or acuminate; the radical ovate or oblong, abruptly narrowed into a slender margined petiole; the lower cauline contracted as if into a winged petiole, with a dilated auriculate-clasping base; the upper ovate-lanceolate, somewhat panduriform, auriculate-clasping; the uppermost usually entire; racemes loosely paniculate, secund; scales of the involucre lanceolate; achenia minutely and softly pubescent; disk-flowers 5–8; rays 1 or 2.—S. amplexicaulis, *Martens, mem. acad. sci. Bruxelles*, 1841? fide *L'Institut, May* 13, 1841; but we merely judge from the appropriates of the name, having seen no description.

Louisiana, *Dr. Leavenworth!* Missouri, *Mr. Duerinck?* (Also? Middle Florida, *Dr. Chapman!*) Sept.–Oct.—A singular species (2–4 feet high), very remarkable on account of its auriculate-amplexicaul leaves, which are not unlike those of Aster prenanthoides, or A. patens *var.* phlogifolius. Those of the stem are about 3 inches long, an inch and a half wide in the middle, tapering to an acute apex, abruptly contracted below (the contracted portion entire), and again much dilated at the insertion; this clasping portion being either entire, or sharply serrate: the lowest leaves are similar, except that the contracted portion is longer and narrower; while the upper, gradually reduced in size and often entire, are less contracted below. Racemes small, irregular. Heads small. Scales of the somewhat pubescent involucre narrow, rather loose. We more commonly observe but a single ray-flower.

50. *S. brachyphylla* (Chapman! mss.): stem scabrous-pubescent, often virgately branched above, very leafy; leaves glabrous, with ciliate-scabrous margins, obscurely veiny; the lowest oblong-spatulate, tapering into a short margined petiole, appressed-serrate; the others oval or ovate, short, closely sessile, often nearly entire; the secund racemes disposed in a virgate panicle; scales of the involucre oblong, obtuse; achenia minutely canescent; disk-flowers 5–6; rays none!

Middle Florida, in fertile soil, *Dr. Chapman! Dr. Alexander!* Georgia & Alabama, *Baldwin! Le Conte!*—Stem 4–6 feet high, often much branched above; the branches elongated, erect. Leaves pale beneath, somewhat shining above; the lower about 3 inches long; the upper and those of the branches an inch to half an inch in length, half an inch or less in breadth, elliptical, ovate, or roundish, entire or sparingly serrate, sometimes mucronulate-acute, the lower surface rather obscurely reticulate-veined. Heads about the size of those of S. altissima. Scales of the involucre glabrous, very minutely ciliate; the exterior very short.—We find no rays in this well-marked species; but some of the exterior flowers are occasionally destitute of stamens.

51. *S. Elliottii:* smooth and glabrous throughout; leaves very numerous, oblong-lanceolate or elliptical, mucronate-acute or somewhat acuminate, sessile, veiny, the margins scabrous, serrate with small appressed teeth, the upper often entire; heads in crowded recurved racemes, forming a pyramidal panicle; scales of the involucre linear, obtuse; rays 8–10, scarcely longer than the (5–7) disk-flowers; achenia minutely pubescent.—S. elliptica? *Ell.! sk.* 2. *p.* 376 (founded on a branched specimen, with the panicle more leafy and irregular than usual), not of *Ait.*

Damp rich soil, in the low country of the Southern States, from Cape Fear River, North Carolina, *Mr. M. A. Curtis!* & Paris Island, *Elliott!* to Georgia, *Le Conte!* (& *herb. Z. Collins!*) Sept.–Oct.—Stem 3–6 feet high, simple, or sometimes branched above, the branches or summit angled; the peduncles and pedicels more or less pubescent.—Allied to S. pilosa, and very similar in the inflorescence, heads, &c. but differs in the smooth stem and leaves; the latter more veiny (the primary veins evident and often reticulated), pale beneath, instead of green both sides, (2–3 inches long, an inch or less in width, the upper smaller); the panicle perhaps more elongated; and the scales of the involucre broader and more obtuse.

† † † Leaves entire, or slightly serrate, the primary veins nearly obsolete; the minutely pellucid-reticulate veinlets inconspicuous except by transmitted light: heads small: scales of the 5–15-flowered involucre few, membranaceous, narrow.

52. *S. pilosa* (Walt.): stem hirsute with spreading hairs, strict, often branching above, very leafy; leaves oblong-lanceolate, serrulate, slightly scabrous, mostly hairy along the midrib, often pubescent beneath, obscurely veined; the upper ovate-lanceolate or oblong, erect, closely sessile, mostly entire; the recurved racemes disposed in a dense pyramidal panicle; rays 7–10, scarcely longer than the about 5 disk-flowers; achenia minutely pubescent.—*Walt.! Car. p.* 207, not of *Mill. dict.?* S. altissima, *Michx.! fl.* 2. *p.* 118, ex *herb.* S. pyramidata, *Pursh, fl.* 2. *p.* 537*; Nutt.! gen.* 2. *p.* 159*; DC. l. c.* S. villosa, *Ell.! sk.* 2. *p.* 372*; DC.! prodr.* 5. *p.* 333*;* not of *herb. Banks!* S. Bosciana, *Moretti*, ex *DC.*

Damp soil, from Florida! Alabama! and Louisiana! to the pine barrens of New Jersey! Sept.–Oct.—Stem 3–7 feet high, robust, villous-hirsute, especially towards the summit, with whitish jointed hairs, often paniculately branched at the summit; the branches or the numerous racemes recurved-spreading. Leaves thickish or rather firm, pale green, closely sessile or partly clasping, nearly veinless except by transmitted light, or sometimes with the primary veins apparent; the prominent midrib, and often the scabrous margins fringed with long hairs; the surfaces often glabrous, but sometimes scabrous-pubescent above and villous-pubescent beneath: lower leaves 2–3 inches long, lanceolate-oblong, sharply serrulate, mostly acute, often narrowed at the base; the upper gradually reduced to about half an inch in length, 3–5 lines in width. Heads very numerous, about as large as in S. odora. Bracts subulate. Exterior scales of the glabrous involucre lanceolate-subulate; the inner linear. Pappus about as long as the corolla of the disk.

53. *S. odora* (Ait.): stem simple or sparingly branched, somewhat pubescent in lines, often declined; leaves linear-lanceolate, entire, very glabrous, with minutely scabrous margins, punctate with pellucid dots; racemes paniculate; rays 3 or 4, rather large; the disk-flowers 3–4; achenia minutely hairy.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 214*; Pursh, fl.* 2. *p.* 539*; Ell.! sk.* 2. *p.* 376*; Bigel.! med. bot.* 1. *p.* 188, *t.* 20, *& fl. Bost. ed.* 2. *p.* 304*; Hook.! fl. Bor.-Am.* 2. *p.* 3*; Darlingt.! fl. Cest. p.* 457*; DC.! prodr.* 5. *p.* 334. S. retrorsa, *Michx.! fl.* 2. *p.* 117*; Ell.! sk.* 2. *p.* 377. Virga-Aurea Americana Tarraconis facie et sapore, &c. *Pluk. alm. t.* 116, *f.* 6.

β. leaves less evidently punctate, and nearly destitute of anisate odor.

Borders of thickets, in dry or sandy soil, Canada (*Pursh*) and New Hampshire! to Florida! and Louisiana! (Also a Mexican & South American species?) Aug.–Oct.—Stem 2–3 feet high, rather slender, often reclined. Leaves closely sessile, spreading, or at length reflexed, 1 to 3 or 4 inches long, one-fourth to more than half an inch wide near the base, tapering to a point; the midrib prominent and smooth; the veins and minutely reticulated veinlets inconspicuous except by transmitted light. Panicle mostly secund, as well as the racemes. Pedicels slender. Bracts subulate. Scales of the involucre few, nearly glabrous; the exterior short; the others linear, rather acute. Pappus shorter than the corolla of the disk.—The leaves yield a volatile oil by distillation, and when bruised exhale a fine anisate odor. A plant is frequently found growing with the ordinary S. odora, which is only to be distinguished by the absence of this agreeable odor, having instead the scent of S. Canadensis, &c.; but the pellucid dots, or reservoirs of volatile oil, are evident in the leaves of this plant, with the aid of a lens, although less abundant than in the common form.

54. *S. tortifolia* (Ell.): stem frequently branched, scabrous-pubescent above; leaves small (very numerous) linear, spreading, often twisted at the base, sparingly serrate; the upper surface with the margins and midrib scabrous, not punctate; the recurved racemes in a pyramidal panicle; rays 3–5, small; the disk-flowers 3–5; achenia slightly pubescent.—*Ell.! sk.* 2. *p.* 377; *Hook.! compan. to bot. mag.* 1. *p.* 97. S. odora, *Michx.! fl.* 2. *p.* 118, not of *Ait.*

Dry fields, &c. North Carolina! to Florida! Louisiana! and Texas! Aug.–Oct.—Stem erect, about 3 feet high, often much branched. Leaves an inch or more in length, 2–4 lines wide, usually serrate with a few scattered teeth, the minutely reticulated veins pellucid, not punctate; the lowermost about 3 inches long, obscurely somewhat triplinerved. Heads smaller than in S. odora; the scales of the involucre obtuse. Pappus nearly equalling the corolla of the disk.—In the Texan plant both surfaces of the leaves are equally puberulent-scabrous.

† † † † Leaves somewhat cinereous or canescent, thickish, feather-veined, and more or less evidently triplinerved, the veinlets reticulated: heads middle-sized (racemes sometimes crowded and scarcely secund).

55. *S. nemoralis* (Ait.): clothed with a very short cinereous pubescence; stem simple or corymbosely branched above; radical leaves oblanceolate, spatulate, or obovate-cuneiform, tapering into a petiole, mostly crenate-serrate; cauline oblanceolate or spatulate-oblong, sessile, nearly entire, somewhat scabrous; racemes numerous, short, dense, at length recurved-spreading, forming a crowded compound raceme or panicle usually turned to one side; scales of the involucre linear-oblong, appressed; rays 6–9, rather short; the disk-flowers 3–6; achenia appressed-pubescent.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 213; *Pursh, fl.* 2. *p.* 537; *Ell.! sk.* 2. *p.* 373; *Hook.! fl. Bor.-Am.* 2. *p.* 3; *Darlingt.! fl. Cest. p.* 456; *DC.! prodr.* 5. *p.* 333. S. hispida, *Muhl. in Willd. spec.* 3. *p.* 2063, fide *herb. Muhl.! &c.* S. cinerascens, *Schweinitz! in Ell. l. c.*

β. dwarf and more canescent; leaves mostly entire; panicle contracted, somewhat virgate.

γ. leaves more scabrous; the upper short, obovate-spatulate.

Dry or sterile fields, &c. Canada! (from the Saskatchawan!) and throughout the United States! common. *β.* On the Assiniboin River, *Douglas!* and towards the sources of St. Peter's River, *Mr. Nicollet!* *γ.* Texas, *Drummond!* Louisiana, *Dr. Hale!* Kentucky, *Dr. Short!* Manitou Island, Lake Michigan, *Dr. Engelmann!* Sept.–Oct.—A well known species, remarkable for its grayish hue and dense inflorescence. The stem (1–3 feet high, in *β.* 6–10 inches) is often entirely simple, and terminated by a small and contracted, more or less elongated and decurved panicle, composed of short glomerate racemes; frequently it produces several such panicles, racemosely or corymbosely arranged: sometimes the stem is much branched at the summit, producing many compound panicles. Scales of the involucre minutely pubescent-ciliate. The var. *γ.* is a more rigid and scabrous form.

56. *S. Radula* (Nutt.): stem simple, scabrous-pubescent; leaves cuneiform-spatulate, sessile, hispidly pubescent, very scabrous, toothed towards the apex; the lowest tapering into a somewhat petiolate base; the upper oblong, mostly entire; panicle contracted, turned to one side, simply racemose at the summit; the racemes short, secund; scales of the involucre oblong, appressed; disk-flowers and rays each 3–6, the latter very short; achenia

minutely pubescent.—*Nutt.! in jour. acad. Philad.* 7. *p.* 102, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 327.

Dry ground, Arkansas, *Nuttall!* Western Louisiana, *Dr. Leavenworth! Dr. Hale!* Missouri, *Dr. Engelmann!* Sept.—Plant 10–18 inches high, rather slender. Radical leaves unknown: the cauline rather crowded and rigid, rough, minutely hispid-ciliate, reticulated; the lowest (sometimes lanceolate-elliptical and acute) 2–3 inches long, half an inch wide near the apex; the upper successively smaller and more oblong or ovate-lanceolate, and entire, mucronulate. Heads rather smaller than in S. nemoralis, crowded. Bracts minute.

57. *S. scaberrima:* stem corymbose at the summit, very scabrous; cauline leaves crowded, ovate or elliptical, closely sessile, rigid, very scabrous, somewhat triplinerved; the lower coarsely serrate-toothed; the uppermost and the lowest bracts roundish, entire; racemes numerous, recurved, forming a fastigiate compound panicle; the heads crowded, strongly secund; disk-flowers and rays each 4–6, the latter very short; achenia nearly glabrous.

Texas, *Drummond!*—The specimens consist of the upper portion of an apparently large species; the thick and coriaceous leaves 1 to 2 inches long, 8–9 lines wide, triplinerved and reticulated, scarcely acute or pointed at either end; the upper smaller and rounder, closely sessile by a very obtuse base; those of the branches and the lowest bracts small, nearly orbicular. Racemes somewhat elongated. Involucre, &c. as in the preceding.—Differs from the character of S. rotundifolia, *DC.* in the secund and much spreading racemes, and the sharply toothed lower leaves. It agrees with the present group in habit and character; but the lower leaves are so manifestly triplinerved that it might be referred to the following division.

58. *S. nana* (Nutt.): pulverulently canescent; stems several from a somewhat ligneous caudex, simple: radical and lowest cauline leaves spatulate, entire or obscurely serrulate towards the apex, on short petioles; the others linear, narrowed at the base, sessile, entire, scattered; panicle thyrsoid-corymbose; scales of the involucre ovate, obtuse; rays 6–7, rather large; achenia appressed-pubescent.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 327.

Rocky Mountains near Lewis River, *Nuttall!*—About a span high. Leaves obscurely triplinerved, soft, obtuse; the radical an inch or more in length. Branches of the inflorescence erect; the lower slender, bearing 5–8 scarcely secund heads (smaller than in S. nemoralis) towards the summit. Involucre somewhat pubescent.

59. *S. incana:* clothed with a close canescent-tomentose pubescence, when old slightly scabrous; stems low, numerous from a suffruticose base; leaves crowded, thick, oval or oblong, mostly obtuse, sessile, triplinerved; the lower oblong-spatulate, sparingly serrate towards the apex, tapering to the base; racemes short, glomerate, crowded in a dense thyrsoid oblong panicle, at length somewhat spreading and secund; scales of the involucre oval-oblong; rays 5–8; achenia appressed-pubescent.

β.? leaves cinereous-canescent and somewhat scabrous (not tomentose), lanceolate, acute at both ends, finely and sharply serrate above the middle, or nearly entire; heads mostly smaller; scales of the involucre oblong-linear.

Prairies between the upper Mississippi and the Missouri, *Mr. Nicollet!* *β.* Margin of the Lake of the Woods, *Mr. Nicollet!* Saskatchawan, *Drummond!* (in *herb. Hook.*) July–Aug.—Root a slender woody rhizoma, producing numerous rigid stems, 6–12 inches high, sometimes a little woody at the base. Leaves 1–2 inches long, 5–9 lines wide, equally canescent both sides, velvety when young, less white and somewhat scabrous when older, conspicuously triplinerved, and more or less reticulate-veined; the upper obscurely serrate or entire. Racemes very dense, aggregated in a close panicle, at length more or less spreading and secund. Bracts linear. Exterior scales of the involucre somewhat pubescent or ciliate.—The plant which we have, with some hesitation, considered a variety of this species, has narrower and less velvety-canescent leaves, more acute, looser racemes, &c. The species would probably be sought for among the *Triplinerviæ;* but we have retained it in this subdivision on account of its close alliance to the adjacent species.

* * * * * * *Racemes spreading or recurved* (*scorpioid*), *secund: leaves manifestly triplinerved or 3-ribbed.*—Triplinerviæ.

† Heads middle-sized: scales of the involucre rather thick and rigid, closely imbricated, with greenish tips.

60. *S. Shortii:* stem simple or branching from the base, minutely scabrous-pubescent; leaves rigid, smooth and glabrous, with ciliolate-scabrous margins, oblong-lanceolate, acute; the lower tapering to the base, sharply and unequally serrate towards the apex; the uppermost entire; racemes short, disposed in an elongated crowded panicle; scales of the involucre linear-oblong; achenia silky-pubescent.

β, heads disposed in a somewhat simple glomerate-spicate raceme.

γ. lower leaves slightly serrate, the upper entire.

Rocky islands at the Falls of the Ohio, *Dr. Short!* (*a*. & *γ*.) Kentucky? *Herb. Rafinesque!* (*β*. & *γ*.) July–Aug.—A very distinct species, 1–2 feet high, with the inflorescence and somewhat the habit of S. nemoralis; but with larger heads, and very smooth and somewhat shining acute leaves, the margins of which are mostly beset with small and rigid inflexed ciliæ; the lower 2–3 inches long, strongly triplinerved, and somewhat reticulate-veined; the uppermost commonly veinless. Racemes numerous, rather dense, secund, at length spreading, forming an erect or decurved more or less contracted panicle, 3–8 inches in length, which is often leafy at the base. Ray and disk-flowers each 5–7.

61. *S. Missouriensis* (Nutt.): smooth and glabrous; stem low, simple; leaves rigid, linear-lanceolate, acute, with very scabrous margins; the lower tapering to the base, sharply and sparsely serrulate (or even laciniate-serrate) towards the apex; the radical oblong-spatulate, petioled, 3–5-nerved, reticulated; racemes rather dense, slender, at length recurved-spreading, forming a short and crowded pyramidal panicle; scales of the involucre oblong, obtuse; achenia slightly pubescent.—*Nutt.! in jour. acad. Philad.* 7. *p*. 32, *& trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 327. S. serotina, *Hook.! in compan. to bot. mag*. 1. *p*. 97. S. glaberrima, *Martens, in acad. Brux.?* (we have seen no character), founded on a plant collected in Missouri by *Duerinck.*

β. leaves shorter and wider, less pointed.

γ. leaves more slender; stem corymbose at the summit; achenia glabrous.

Dry prairies of the Assiniboin (*Douglas!*) and the sources of St. Peter's River (*Mr. Nicollet!*) of the Upper Missouri (*Mr. Wyeth!*) to St. Louis, *Drummond!* Illinois, *Mr. Buckley!* Louisiana and Arkansas, *Dr. Pitcher! Dr. Leavenworth!* (Also Chapel Hill, North Carolina, according to Nuttall; but we apprehend some mistake.) *β*. Texas, *Drummond!* *γ*. Illinois, *Mr. Buckley!* July–Aug.—Stem a foot or more in height, from a somewhat ligneous caudex, simple, or sometimes fastigiately branched at the summit. Leaves crowded, often fascicled in the upper axils, coriaceous, shining, perfectly smooth, except the densely ciliolate-scabrous margins; the uppermost entire and scarcely if at all nerved; the others varying from obscurely appressed-serrulate to sparsely laciniate-toothed, conspicuously triplinerved when old, with the veins of the lower surface also somewhat parallel (the veinlets minutely reticulated), 2–3 inches long, 2–4 (in *β*. sometimes half an inch) in width. Racemes at first nearly erect, at length elongated and recurved, forming a short and broad panicle. Involucre closely imbricated. Rays 6–10, rather short.—A well marked species. The plant is sweet-scented, according to Mr. Buckley.

† † Heads small: scales of the involucre narrow, membranaceous: racemes mostly elongated, forming an ample panicle.

62. *S. Leavenworthii:* stem strict, scabrous; leaves linear, acute, sharply serrate, with ciliolate-scabrous margins, inconspicuously triplinerved, smooth and glabrous; racemes loose, recurved-spreading, somewhat secund, forming an elongated open panicle; peduncles villous-pubescent; (heads large for this subdivision;) scales of the involucre linear-oblong, very obtuse; rays small.

Florida, near Micanopy, &c., *Dr. Leavenworth!* Sept.–Oct.—Stem apparently 3 or 4 feet high, terete, simple, puberulent-scabrous throughout. Leaves numerous, about 3 inches long, and one-fourth of an inch wide, serrate with small and sharp appressed teeth, entire and somewhat narrowed near the base, with a conspicuous midrib, from which arise two rather obscure lateral nerves, veinless except by transmitted light, when they appear minutely reticulated under a lens. Racemes in a simple or compound somewhat leafy panicle (6–12 inches long), loose; the pedicels slender. Heads fully as large as in S. gigantea, and much less crowded. Rays about 12, small and slender; the disk-flowers nearly the same number. Ovaries minutely pubescent.—Allied in some respects to the S. odora group.

63. *S. elongata* (Nutt.): stem smooth or minutely pubescent, strict; leaves lanceolate, acute or acuminate at each end, sparingly serrate, nearly glabrous, obscurely triplinerved (the veinlets reticulated); panicle elongated, virgate or narrowly pyramidal; the racemes at length somewhat spreading and secund; scales of the involucre linear-subulate; rays small and slender; achenia pubescent.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 327. S. elata, *Hook.! fl. Bor.-Am.* 2. *p.* 5, not of *Soland.*

β. leaves lanceolate-linear, sharply and irregularly serrate; racemes strict, at length somewhat spreading, but scarcely secund; heads smaller.—S. Canadensis *β. Hook.! l. c.* S. stricta, *Less. in Linnæa,* 6. *p.* 502? (Leaves either smooth and very indistinctly triplinerved, or slightly scabrous with the nerves more evident: varies also with the leaves shorter, the panicle short and obtuse. S. Canadensis, *Hook. & Arn.! bot. Beechey, p.* 145.)

γ.? leaves larger, somewhat scabrous above, minutely pubescent beneath, sometimes nearly glabrous; panicle dense, pyramidal, the crowded racemes at length recurved-spreading, secund; heads larger.—S. elongata *β. Nutt.! l. c.* S. Canadensis, *Hook.! fl. Bor.-Am.* 2. *p.* 1, as to Arctic specimens.

Oregon and California (*α.* & *β.*), *Menzies! Beechey! Douglas! Nuttall! γ.* Fort Vancouver, *Nuttall! Mr. Garry!* Straits of Da Fuca, *Dr. Scouler!* Arctic America, from Slave Lake, *Drummond!* to Fort Franklin on the Mackenzie River, *Richardson!*—Plant 3–4 feet high, in *γ.* stout, but the Arctic specimens more dwarf. Panicle 5–10 inches long, strict and narrow, with the heads about as large as in S. Canadensis: in *γ.* the dense panicle is usually thyrsoid or broadly pyramidal, with the heads fully as large as in S. gigantea; it is perhaps a distinct species. Rays exserted, but slender and inconspicuous.—This species perhaps extends to extra-tropical South America; for to it (or to S. linearifolia, *DC.?*) we may probably refer a plant collected in Mendoza by the late Dr. Gillies, mentioned in *Hook. fl. Bor.-Am.* under S. lanceolata.

64. *S. Canadensis* (Linn., Ait.): stem scabrous-hirsute or villous; leaves lanceolate, acuminate, sharply serrate, sometimes almost entire, more or less pubescent beneath and scabrous above; panicle pyramidal or fastigiate, of

very numerous recurved racemes; heads small; rays very short; achenia pubescent.—*Linn. hort. Ups. p.* 259, *& spec.* 2. *p.* 878; *Ait.! Kew.* (*ed.* 1) 3. *p.* 210; *Wild. spec.* 3. *p.* 2055; *Pursh, fl.* 2. *p.* 535; *Ell.! sk.* 2. *p.* 369; *Hook.! fl. Bor.-Am.* 2. *p.* 1 (excl. β.); *Darlingt.! fl. Cest. p.* 455; *DC.! prodr.* 5. *p.* 330. S. nutans, *Desf.! cat.*; *DC.! l. c.* Virga-Aurea angustifolia, &c. *Pluk. alm. t.* 236, *f.* 1.—Varies with the leaves almost smooth and glabrous (closely approaching S. serotina); and from oblong-lanceolate to elongated linear-lanceolate (a state of the latter is S. longifolia, *Schrad.! hort. Gœtt.*, *& in DC.! prodr. l. c.*), from very sharply serrate to nearly entire.

β. *intermedia:* stem villous or densely cinereous-pubescent; leaves softly pubescent or tomentose beneath, scabrous above.—S. Canadensis γ. *Ait.! l. c.*; *Hook.! l. c.* S. procera, *Desf. cat.*; *DC. l. c.* ("Heads much smaller than in S. Canadensis"); *Wild. enum.?*

γ. *procera:* stem villous or scabrous-hirsute; leaves tomentose beneath, scabrous above, elongated lanceolate, sparingly serrate, or the upper entire; heads larger, with the rays rather longer.—S. procera, *Ait. l. c.*; *Ell.! sk.* 2. *p.* 369.—Varies with the leaves slightly pubescent, except along the nerves, and the stem scabrous-pubescent, or sometimes glabrous below.

δ. *scabra:* stem scabrous-hirsute or cinereous; leaves lanceolate or oblong-lanceolate, frequently entire, indistinctly triplinerved, more veiny and pubescent-tomentose or scabrous-pubescent beneath, very scabrous above; heads and rays as in var. γ.—S. scabra, *Muhl.! cat.*, *& fl. Lancastr. ined.* (where it is well characterized); *Willd. spec.* 3. *p.* 2059 (where it is so incorrectly described that it has not since been recognized); not of *DC.!*

Borders of thickets, fields, &c., common nearly throughout the United States! to Subarctic America! (Oregon, *Nuttall.*) δ. Pennsylvania! to Georgia! and west to Saskatchawan! Louisiana! and Texas! Aug.–Oct.—A polymorphous species, distinguished by its small heads, very inconspicuous rays, and pubescent or scabrous stem and leaves. Our var. β. passes into the succeeding form, from which it is only to be distinguished by the somewhat larger heads: the latter is scarcely distinguishable from S. scabra, *Muhl.*; which has shorter and usually broader leaves, often indistinctly triplinerved but somewhat rugosely veined.—This species appears to have been a long time cultivated in many European gardens, under the name of S. altissima.

65. *S. serotina* (Ait.): **stem very smooth, often glaucous; leaves lanceolate, acuminate, serrate, glabrous except the veins beneath, the margins and usually the upper surface scabrous; panicle pyramidal, of numerous recurved racemes; peduncles roughish-pubescent; rays short; achenia at length nearly glabrous.**—*Ait. Kew.* (*ed.* 1) 3. *p.* 211; *Muhl.! herb.*; *Hook.! l. c.* partly. S. gigantea, *Darlingt.! fl. Cest. p.* 455.

Borders of thickets and low grounds, Canada! and nearly throughout the United States! (Oregon, *Nuttall.*) Aug.–Oct.—Distinguished by its smooth and stout stem (4–8 feet high), while the leaves are more or less pubescent along the ribs beneath, with the upper surface scabrous, at least towards the margins. The leaves are usually less attenuate at the base than in S. gigantea, which some states very closely approach; and the heads and rays are commonly intermediate in size between that species and S. Canadensis. Achenia pubescent when young.

66. *S. gigantea* (Ait.): **stem stout, smooth and often glaucous; leaves smooth and glabrous both sides, lanceolate, attenuate-acuminate, densely scabrous-ciliolate, very sharply serrate, except the narrowed base; panicle pyramidal, of numerous recurved racemes; peduncles pubescent or villous; (heads large for this subdivision) rays exserted; achenia pubescent.**—*Ait.! Kew.* (*ed.* 1) 3. *p.* 211; *Hook.! fl. Bor.-Am.* 2. *p.* 2; *DC.! prodr.* 5. *p.* 331. S. serotina, *Willd. spec.* 3. *p.* 2056.—Varies, with the leaves broadly,

or narrowly lanceolate (the latter S. glabra, *Desf.! cat.; DC.! l. c.*), very coarsely, or finely and sparsely serrate (the latter S. serotina, *Hook.! l. c.* as to spec. from Oregon, &c.), sometimes with the lateral nerves less distinct (S. gigantea, *Willd.! l. c.*); the panicle large and crowded, or sometimes loose and elongated.

β. leaves varying from lanceolate to oval-lanceolate, narrowed at the base; the lateral nerves often indistinct; panicle dense, thyrsoid or fastigiate.—S. gigantea *β. Hook.! l. c.* S. Pitcheri, *Nutt.! in jour. acad. Philad.* 7. *p.* 101, *& in trans. Amer. phil. soc. l. c.*

Fields and borders of thickets, Canada! and Saskatchawan! to Alabama! and west to Oregon! Common in the Northern and Western States. *β*. Arkansas, (*Dr. Pitcher!*) Kentucky! &c., to Saskatchawan! and Oregon! Aug.–Sept.—Distinguished by its perfectly smooth leaves as well as stem, (the latter 3 to 7 feet high), and larger heads with more conspicuous rays than any of its immediate allies.

67. *S. rupestris* (Raf.): stem slender, often loosely branched above, smooth, the branches and peduncles pubescent; leaves smooth and glabrous, linear-lanceolate, attenuate at both ends, entire or sparsely serrulate; panicle virgate; heads small; rays very short; achenia pubescent.—*Raf.! ann. nat.* (1820) *p.* 14.

Cliffs of Kentucky River, *Rafinesque! Dr. Short!* and apparently common in Kentucky! Indiana! &c. Aug.–Sept.—Smooth like S. gigantea, with the small heads and inconspicuous rays of S. Canadensis; remarkable for its nearly entire narrow leaves, somewhat resembling those of S. odora, but triplinerved (the nerves whitish), and for the slender and often simple racemose panicles which terminate the stem or loose branches. Stem 2–3 feet high.

§ 3. *Frutescent, branched, somewhat glutinous: leaves obscurely triplinerved, veinless, entire: heads corymbose-paniculate: involucre as in* § Virgaurea, *few-* (4–7-) *flowered: rays* 1–3.—CHRYSOMA, Nutt. (*in jour. acad. Philad., & trans. Amer. phil. soc.* excl. spec. 2 & 3.)

A specimen of a plant very nearly allied to the following, from the Bahama Islands, exists in Sir William Hooker's herbarium, chiefly differing in its smaller and mostly 4-flowered heads, short rays, and more evidently triplinerved leaves, which do not exhibit the beautiful reticulated structure of that species: it is very probably the S. Domingensis, *Spreng.* This section is allied to the *Maritimæ* on the one hand, (and is composed of sea-side plants?) and to Euthamia on the other.

68. *S. pauciflosculosa* (Michx.): glabrous or glaucous, the paniculate branchlets somewhat viscid; leaves thick, lanceolate, oblanceolate, or linear, obtuse, entire, narrowed at the base, sessile; branches of the compound panicle erect; scales of the 5–7-flowered involucre narrowly oblong, carinate; rays large; achenia silky-villous.—*Michx.! fl.* 2. *p.* 116. Chrysoma solidaginoides, *Nutt.! in jour. acad. Philad.* 7. *p.* 67.

In sand on the coast of Carolina (*Michaux!*) Georgia, *Mr. Croom!* Florida, *Mr. Ware! Dr. Leavenworth! Dr. Ingalls! Dr. Chapman!* and Alabama, *Mr. A. Bigelow!*—Stems woody, much branched, 1–3 feet high. Leaves 1–2 inches long, 1-nerved, or often obscurely triplinerved, veinless, appearing reticulate-punctate, or rather cancellate, by transmitted light. Heads rather large, somewhat clustered. Rays large, deep yellow. Pappus unequal, turning somewhat brownish.—This remarkable plant was doubtless unknown to Pursh, who has probably at a mere venture given it as a native of Virginia.

§ 4. *Herbaceous, much branched, fastigiate-corymbose: scales of the involucre much appressed, somewhat glutinous: receptacle fimbrillate: rays* (6–20) *more numerous than the disk-flowers, very small: achenia oblong, villous-pubescent: heads in corymbose clusters, mostly fascicled: leaves linear, entire,* 1–5-*nerved, sessile.*—EUTHAMIA, Nutt.

69. *S. lanceolata* (Linn.): stem much branched, fastigiate; the branches (at least the angles), with the nerves and margins of the lanceolate-linear 3–5-nerved leaves minutely scabrous-pubescent; heads obovoid-cylindrical, in dense corymbose clusters, sessile; scales of the involucre obtuse, oblong or lanceolate, the innermost linear; flowers of the disk 8–12; the minute rays 15–20.—*Linn.! mant. p.* 114; *Ait.! Kew.* (*ed.* 1) 3. *p.* 214; *Michx.! fl.* 2. *p.* 116 (*a.* major); *Pursh, fl.* 2. *p.* 405; *Bigel. fl. Bost. ed.* 2. *p.* 301; *Hook.! fl. Bor.-Am.* 2. *p.* 6 (partly); *Darlingt.! fl. Cest. p.* 461. S. graminifolia, *Ell.! sk.* 2. *p.* 391; *DC.! prodr.* 5. *p.* 341. Euthamia graminifolia, *Nutt.! gen.* 2. *p.* 162, *& in trans. Amer. phil. soc. l. c.* Chrysocoma graminifolia, *Linn. spec.* 2. *p.* 841.

Fields and borders of thickets, Canada! (from Subarctic America) and nearly throughout the United States. Aug.–Oct.—Stem 2–4 feet high, striate-angled, usually scabrous-puberulent. Leaves sometimes broadly lanceolate-linear (3–5 inches long) and 5-nerved (the lateral nerves more slender), sometimes narrow and indistinctly 3-nerved, numerous, but not fascicled in the axils. Heads one-fourth to one-third of an inch in length. Receptacle setose-fimbrillate.

70. *S. tenuifolia* (Pursh): glabrous or slightly scabrous; stem much branched, fastigiate; leaves very narrowly linear, spreading, 1- (rarely somewhat 3-) nerved, punctate with resinous dots; heads obovoid or turbinate, in loose corymbose clusters, mostly in glomerules of 2 or 3, sometimes pedicellate; rays 6–12, slightly exserted; the disk-flowers 5–6.—*Pursh, fl.* 2. *p.* 540; *Ell.! sk.* 2. *p.* 392; *DC. prodr.* 5. *p.* 341. S. lanceolata *β.* minor, *Michx.! l. c.* Euthamia tenuifolia, *Nutt.! l. c.*

Sandy fields, &c. from the coast of Massachusetts! and New York! to Florida! and Louisiana! Aug.–Oct.—A more slender plant than the preceding, with the heads smaller, and less glomerate. Leaves 1 to nearly 3 inches long, one line or less in width, sprinkled with resinous atoms, often fascicled in the axils. When the corymb is reduced to few heads, these are commonly pedicellate. The species is variable, and some states nearly approach S. lanceolata.

71. *S. leptocephala:* very smooth; stem densely fastigiate-corymbose at the summit; leaves lanceolate-linear, 1-nerved, or obscurely 3-nerved; heads narrow, cylindrical-clavate, in compound corymbose clusters, mostly fascicled and sessile at the apex of the peduncles; scales of the involucre linear; rays 8–10, very small; the disk-flowers 3 or 4.

Western Louisiana, *Dr. Leavenworth! Dr. Hale!* Texas, *Drummond!*—Stem apparently strict and nearly simple, except at the summit. Leaves crowded, but not fascicled, 2–3 inches long, 2–3 lines wide, with a strong midrib and usually 2 obscure lateral nerves, pellucid-punctate, as in the allied species, but not sprinkled with resinous atoms, not glutinous. Heads very numerous and slender. Rays mostly shorter than the disk-flowers. Receptacle conical, fimbrillate.

72. *S. occidentalis* (Nutt. under Euthamia): very smooth, loosely branched, somewhat paniculate; leaves narrowly lanceolate-linear, obscurely 3-nerved; heads in small corymbose clusters, pedicellate; scales of the many-flowered involucre linear-lanceolate, acute.—S. lanceolata, *Cham. &*

Schlecht.! in Linnæa, 6. *p*. 502; *Hook.! fl. Bor.-Am.* 2. *p*. 6, partly. Euthamia occidentale, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 326.

Oregon, *Dr. Scouler! Douglas! Nuttall!* and California, *Chamisso!* to the Rocky Mountains, *Nuttall.*—More paniculately branched than any other species of this division; the long and slender branches terminated by small clusters; the short and broadish heads all, or nearly all pedicellate: rays 16–2[illegible], a little exserted; the disk-flowers 8–14: appendages of the style of the latter obtuse. Receptacle with the margins of the alveoli pilose, rather than fimbrillate.

‡ *Species not sufficiently known to us, founded on native specimens.*

73. *S. decemflora* (DC.): stem erect, terete, and (with the leaves) somewhat scabrous with a very short pubescence; leaves oblong, mucronulate, entire, somewhat triplinerved; the radical attenuate at the base; racemes somewhat secund, disposed in a corymbose panicle; scales of the glabrous involucre linear; heads 10-flowered; the rays 5, very minute; achenia silky-villous. *DC. prodr.* 5. *p*. 3[illegible]2. 3/

Texas, in the eastern districts, *Berlandier*. Plant a foot high. *DC.*—Perhaps it belongs to the corymbose division.

74. *S. rotundifolia* (DC.): stem erect, terete, puberulent, scabrous; leaves oval, ovate, or obovate, obtuse, mucronate, the margins and both surfaces very scabrous; the lower crenate, the upper entire; racemes erect, compact, short, disposed in a narrow panicle; bracts roundish; scales of the involucre glabrous, somewhat acute; rays very small. *DC. prodr.* 5. *p*. 33~~2~~. 9/

Texas, in the eastern districts, *Berlandier*.—Very distinct in the form of its bracts. *DC.*

75. *S. lepida* (DC.): stem erect, strict, terete, puberulent; leaves oval-lanceolate, with a long cuneate entire base, coarsely serrate at the apex, acuminate, feather-veined, somewhat scabrous, especially the margins and the veins beneath; panicle erect, terminal; scales of the glabrous involucre linear, acuminate; rays a little longer than the disk. *DC. prodr.* 5. *p*. 339.

β. subserrata (DC. l. c.): leaves slightly serrate.

Nootka, *Hænke*.—Allied to S. latifolia and S. ambigua. *DC.*

76. *S. compacta* (Turcz.): racemes erect; stem ascending, strict, scabrous; leaves oblong-lanceolate, tapering into a long petiole, entire, or the uppermost serrulate, slightly scabrous, the margins ciliate; heads densely glomerate, surrounded by leaves.—*Turcz. in bull. soc. nat. Mosc.* 1840. *p*. 73.

Unalaschka, *Turczaninow*.—Perhaps the same as S. lepida, *DC.*

77. *S. elata* (Pursh): stem hairy, terete; leaves lanceolate, somewhat hairy beneath; racemes erect; rays elongated. *Pursh, fl.* 2. *p*. 543.

North America, (*Herb. Banks.*) *Pursh.*—Two plants are ticketed 'S. elata' in the Banksian herbarium: one, a cultivated specimen of a maritime species, is S. integrifolia, *Desf. & DC.*: the other is marked '*New Jersey, Bartram*'; and has a hairy stem, corymbosely branched above; elliptic serrate leaves, which are hairy on both surfaces and ciliate; erect racemes; rather rigid and minutely strigose-canescent scales of the involucre (the outermost ovate, short; the inner oblong-lanceolate, slightly pointed, all somewhat carinate); and strigose-canescent achenia. Dr. Boott has remarked its great similarity to "S. Narbonensis, *Pourret, in act. Tolos.* 3. *p*. 329" (of which we have seen no description), from which we suspect it is not distinct.

78. *S. pauciflora* (Raf.): stem simple, smooth; leaves oblong-lanceolate, acute, entire; flowers 1–5, terminal.—*Raf. in med. repos.* (*hex.* 2) 5. *p*. 359.

Gloucester County, New Jersey, and Kent County, Delaware, *Rafinesque*

‡ ‡ *Species founded on garden specimens (many of unknown or uncertain origin), which we have not identified with native plants.*

* *Racemes erect.*

79. *S. grandiflora* (Desf.): clothed with a short and close villous pubescence, somewhat scabrous; leaves elliptical or oblong-lanceolate, finely serrate, acute; the lower narrowed at the base; racemes paniculate, forming a thyrsus; heads 30–40-flowered; scales of the involucre oblong, obtuse, pubescent; rays (large) 8–10; achenia pubescent.—*Desf.! cat. hort. Par. ed.* 3. *p.* 403; *DC.! prodr.* 5. *p.* 337.

North America? the particular origin unknown; cultivated in the Garden of Plants, Paris.—We have seen no indigenous specimens of this species; which has much the aspect of S. rigida, and its heads are nearly the same size; but the rather loose racemes are paniculate, the upper shorter and with few heads, so that the inflorescence forms a pyramidal thyrsus or panicle instead of a fastigiate corymb; the scales of the involucre are narrower and less obtuse; the achenia clothed with a minute pubescence; even the upper leaves are serrulate, and the radical (which we have not seen) are said to be scarcely petioled.

80. *S. multiflora* (Desf.): stem erect, glabrous, terete, very much branched, the paniculate branches sparsely pubescent; leaves sessile, lanceolate, acuminate, serrate, glabrous, or the uppermost somewhat pubescent along the nerves; racemes erect; scales of the involucre glabrous, acute; rays rather longer than the disk. *DC.—Desf.! cat. hort. Par. ed.* 1804, *p.* 103, *& ed.* 3. *p.* 402; *Pers. syn.* 2. *p.* 449; *DC.! prodr.* 5. *p.* 336.

Said to be of North American origin; but we have seen no native specimens which accord with the cultivated plant. The heads resemble S. Canadensis, but the racemes are very short, in erect panicles. Achenia pubescent. Leaves somewhat scabrous above; the upper slightly triplinerved, the midrib pubescent.

81. *S. fuscata* (Desf.): very glabrous; stem erect, brownish-red, smooth [terete]; leaves lanceolate, quite entire; racemes erect; pedicels short, bracteolate; scales of the involucre oblong, glabrous, scarcely acute; rays 5–6, linear, a little longer than the disk; the disk-flowers 6–7. *DC.*—"*Desf.! cat. hort. Par. ed.* 3. *p.* 402"; *DC.! prodr.* 5. *p.* 340.

North America?—Unknown to us as a native plant. The leaves are not unlike S. speciosa.

82. *S. plantaginea* (Desf.): glabrous; stem angled; leaves triplinerved, slightly serrulate, acute, narrowed towards the base; the lower ovate; floriferous branches erect, leafy. *Desf. cat. l. c. p.* 402.

Cultivated in the Paris Garden; probably of American origin.—Very glabrous: stem 3–4 feet high. Flower-branches panicled; the partial racemes of few small heads. Pedicels with subulate bracts. *Desf.*—This is referred by De Candolle to his S. elliptica.

83. *S. hirta* (Willd.): stem paniculate, hirsute; leaves lanceolate, scabrous on both sides; the cauline serrate, those of the branches entire; racemes erect; rays elongated. *Willd. enum. p.* 891.

North America.—Sufficiently distinguished by its hirsute stem, and scabrous leaves; the cauline deeply and sharply serrate. *Willdenow.*—It has never been identified in this country.

84. *S. lithospermifolia* (Willd.): stem branching, pubescent; leaves lanceolate, attenuate, scabrous on both sides, triplinerved, entire; racemes erect; rays elongated. *Willd. enum. p.* 892; *Link, enum.* 2. *p.* 332; *DC. prodr.* 5. *p.* 339.

North America, *Willdenow.*—Leaves nearly as in Lithospermum officinale. *Willd. l. c.*—Cauline leaves long, triplinerved, scabrous. Flowers rather large. *Link.*—Stem pubescent, somewhat hispid. Leaves apiculate with a callous mucronation, somewhat triplinerved, the lateral veins minute. *DC.*—Pursh, who professes to have seen this species growing, gives the habitat, Sandy barren woods, New Jersey to Carolina; but affords no other information.

85. *S. gracilis* (Poir.): stem erect, glabrous, somewhat simple; leaves lanceolate, acuminate, serrate, glabrous, ciliolate, feather-veined; the lower oval-lanceolate, attenuate at the base; the uppermost nearly entire; racemes erect, bearing few heads disposed in a narrow panicle; scales of the involucre scarcely acute; flowers 9; those of the ray nearly twice the length of the disk. *DC.*—*Poir. dict.* 8. *p.* 476? (where the leaves are said to be entire) *DC. pl. rar. hort. Genev.* 6. *p.* 6, *& prodr.* 5. *p.* 336.
North America?—The plant is said to be a foot and a half high, with a reddish stem; the largest leaves 2 inches long, 6–8 lines wide; the branches terminated by erect panicles, 2–3 inches in length, less than an inch in breadth: the ovaries clothed with very small appressed hairs. The latter character, among others, would seem to separate the plant from S. stricta and S. linoides.

86. *S. Schraderi* (DC.): stem erect, terete, sparsely pubescent, paniculately branched; leaves linear-lanceolate, acuminate, serrate at the apex, glabrous, with somewhat scabrous margins, the uppermost entire; racemes erect, very short, bracteolate; scales of the involucre acute; rays linear, as long as the disk. *DC. prodr.* 5. *p.* 336. S. gracilis, *Schrad. hort. Gœtt.*, fide *DC.*
A species of unknown (probably N. American) origin, allied to the preceding; but the leaves longer, narrower, and a little more rigid; the long paniculate branches bearing very short axillary racemes for a long distance; the rays much shorter, &c. *DC.*

87. *S. carinata* (Schrad. in DC.): stem erect, angled at the summit, somewhat puberulent; radical leaves on long petioles, oblong, tapering at the base, obtuse at the apex, mucronate, sinuate-serrate; the upper sessile, linear, somewhat serrate; all glabrous, with the margins scabrous, the midrib prominent beneath; racemes erect, disposed in a panicle; rays 7–9, longer than the disk. *DC. prodr.* 5. *p.* 337.
Cultivated in the Gœttingen Botanic Garden, the origin unknown, perhaps North American.—Radical leaves 7 inches long, including the petiole, 8–10 lines broad. Pedicels puberulent, bracteolate. *DC.*—Perhaps a cultivated state of S. stricta.

88. *S. mollis* (Bartl.): leaves, as well as the terete stem, pulverulent-pubescent, with scabrous margins, obovate-oblong, serrate above; the floral ones oblong, entire; racemes erect, panicled; scales of the involucre appressed, acute, glabrous; rays longer than the disk. *Bartl. ind. sem. hort. Gœtt.* 1836, *p.* 5, *& in Linnæa*, 12. *suppl. p.* 80; *DC. prodr.* 7. *p.* 279.
North America; raised from seed collected by Prince Neu-wied.—May it be a state of S. nemoralis?

* * *Racemes spreading or recurved, secund.*

89. *S. verrucosa* (Schrad.): stem verrucose, glabrous, erect, the summit reflexed; leaves ovate-lanceolate, acute, serrate, glabrous, the upper narrower; racemes axillary, as long as the leaves, compound, the summit reflexed; rays elliptical. "*Schrad. hort. Gœtt. p.* 12. *t.* 6, *& in neu. jour.* 1810, *p.* 140; ex *DC. prodr.* 5. *p.* 334.

North America: said to be allied to S. arguta and S. elliptica. *DC.*— This is perhaps our S. neglecta: but we have never observed a verrucose stem in that species.

90. *S. recurvata* (Willd.): stem erect, pubescent; leaves lanceolate, acuminate (veiny), serrate, nearly glabrous, the margins scabrous; racemes elongated, secund, panicled. *Willd. enum. p.* 889; *DC. prodr.* 5. *p.* 334.
North America, *Willdenow.*—Described from a plant cultivated in the Berlin Botanic Garden.—Leaves glabrous above, slightly scabrous along the nerves beneath. Rays linear-oblong, a little longer than the disk. *DC.*— Pursh is the only American author who pretends to have recognized this species, which he gives as a native of shady woods of Pennsylvania and Virginia.

91. *S. lateriflora* (Linn.): panicle corymbose; racemes recurved, ascending; stem bearing flower-branches below the middle. *Linn. spec.* 2. *p.* 879.
North America, *Kalm.*—The plant is said by Linnæus to be half the size of S. Canadensis; the leaves entire or with one or two teeth; the flowers as in S. altissima; the simple branches rather shorter than the stem, corymbose. As remarked by Smith, (*Rees, cycl.*) there is some doubt as to the plant Linnæus had in view, which an inspection of his herbarium does not remove. The plant cultivated under this name appears to have been much changed by long cultivation. As described in the Hortus Kewensis, it is said to have an erect somewhat hairy stem, lanceolate somewhat triplinerved glabrous leaves with scabrous margins, the lower somewhat serrate, and the paniculate racemes secund and somewhat recurved. According to Willdenow (*enum. p.* 889), when cultivated in a shady place, the stem is very simple, with simple axillary racemes, the lower very long, the upper short: but in exposed situations the stem becomes branched.

92. *S. fragrans* (Willd.): stem erect, glabrous; leaves glabrous, oblong, attenuate at each end, slightly triplinerved; the lower somewhat serrate, the upper entire; racemes more or less secund; pedicels pubescent; bracts linear-subulate, arcuate-recurved; scales of the involucre somewhat greenish [ovate-lanceolate, acutish]; rays oblong, rather longer than the disk [achenia silky-villous]. *DC.*—*Willd. enum. suppl. p.* 59, ex *Link, enum.* 2. *p.* 331; *DC.! prodr.* 5. *p.* 331.
North America, *Willd.*—We have seen no native plant which accords with our specimens of this species, gathered in the Berlin Botanic Garden. It is perhaps a maritime species; and the leaves (which are rather thick, dark green, and shining above, 2–3 inches long, about half an inch wide, minutely veiny,) are scarcely sufficiently 3-ribbed to give it a place among the *Triplinerviæ*. The racemes are mostly axillary, rather crowded, and scarcely longer than the leaves; the heads fully middle-sized; the exterior scales of the involucre greenish: and the achenia clothed with white appressed hairs.

93. *S. dubia* (Scopoli): stem erect, striated, slightly hairy; leaves lanceolate, smooth, distantly toothed; clusters panicled, unilateral, rather hairy, the lower ones axillary; bracts lanceolate, smooth. *Smith.*—*Scopoli, del. insubr.* 2. *p.* 19, *t.* 10; *Smith, in Rees, cycl. no.* 23. S. Cleliæ, *DC. prodr.* 5. *p.* 331.
Cultivated in the Italian gardens, (collected by Smith in the garden at Pavia, in 1787; and by De Candolle in that of Clel. Grimaldi near Genoa, in 1808,) and supposed to be of North American origin. According to Smith, Dryander "considered it as coming nearest to S. elliptica; but its leaves are narrower, and its bracteas much less. Most of the clusters are axillary, composing a leafy panicle, and about as long as their corresponding leaves.

Rays rather numerous. The foliage is rigid, entirely smooth, finely toothed, not serrated, somewhat triple-ribbed, indeed more so than in S. lateriflora, next to which species we should have placed it but for its alleged affinity to S. elliptica." *Smith, l. c.*

94. *S. reflexa* (Ait.): stem erect, villous; leaves lanceolate, somewhat serrate, triplinerved, scabrous, reflexed; racemes paniculate, somewhat secund. *Ait. Kew.* (*ed.* 1) 3. *p.* 211; *Willd. spec.* 3. *p.* 2057 (who adds: Leaves narrowly lanceolate, acuminate, with about three serratures in the middle, scabrous, reflexed; branches of the panicle secund, reflexed, short). *DC.! prodr.* 5. *p.* 330.
This is unknown to us as a wild plant, nor can we identify the one or two different species which are cultivated in Europe under this name with any indigenous species. Pursh's habitat, "Pine woods and old fields, New Jersey to Carolina," is probably of no account; and the species was not recognized by Elliott. The plant of De Candolle (Geneva Bot. Garden) has a very much contracted and simple erect panicle, with the heads rather larger than in S. Canadensis; the stem somewhat pubescent above; the narrowly lanceolate leaves slightly pubescent beneath, obscurely triplinerved.

S. Noveboracensis, Linn. (the particular derivation of the specimen unknown), the ray-flowers of which probably were not yellow, is apparently an Aster, with heads as large as those of A. patens.

S. asperula, of Desf. cat. l. c., the native country of which is not mentioned, by no means corresponds with the plant received by De Candolle under this name, which he considers a doubtful and probably monstrous state of S. rigida: but the species described by Desfontaines is said to have elongated and spreading racemes, with small secund heads.

40. BIGELOVIA. (Bigelowia,*) *DC. prodr.* 5. *p.* 329 (excl. § 2 & 3), *& mem. Comp. t.* 5; not of *Smith*, of *Spreng.*, nor of *Raf.*

Heads 3–4-flowered; the flowers all perfect and tubular. Involucre clavate-cylindrical, somewhat colored, as long as the flowers; the scales (10–14) linear, imbricated, appressed, rigid, somewhat glutinous. Receptacle narrow, pointed by a hyaline or scale-like cusp as long as the achenia. Corolla, anthers, and style nearly as in Linosyris; the latter scarcely exserted. Achenia somewhat obconic, hairy. Pappus a single series of scabrous capillary bristles.—A perennial glabrous herb, with slender stems, simple or branched from the base, somewhat naked above, corymbose at the summit. Leaves alternate, oblanceolate or linear, entire, 1–3-nerved, obscurely punctate. Heads in a fastigiate corymb or cyme. Flowers yellow, the involucre also yellowish.

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* "A Chrysocoma separatum dicavi cl. *J. Bigelow*, qui floræ Americanæ auream coronam flora Bostoniensi et medica addidit." *DC. l. c.*—We gladly retain the name of Bigelovia for this genus (excluding the species wrongly associated with it); since the Bigelovia of *Spreng. syst.*, if sufficiently distinct from Spermacoce, will keep that of Borreria so long as the Borrera of Acharius is merged in Parmelia, &c. But if both the above-mentioned genera prove distinct, the name Borrera, *Achar.* must be preserved in the Lichens, and that of Bigelovia, *Spreng.*, *Arn. &c.* in Rubiaceæ; in which case the present genus may be called *Aciclinium.*

B. nudata (DC.! l. c.)—Chrysocoma nudata, *Michx.! fl.* 2. *p.* 101; *Pursh! fl.* 2. *p.* 517; *Ell.! sk.* 2. *p.* 309.

α. spathulæfolia: radical and lower leaves oblanceolate, 1- or obscurely 3-nerved, tapering into an attenuated base; the cauline ones scattered, often very few, linear.—B. nudata, *DC.! l. c., & mem. comp. t.* 5. Chrysocoma nudata, *Nutt. gen.* 2. *p.* 137.

β. virgata: earliest radical leaves linear-spatulate; the others, and the (often more numerous) cauline ones narrowly linear, 1-nerved.—B. virgata, *DC.! l. c.* Chrysocoma virgata, *Nutt. l. c.*

Borders of swamps, and low pine barrens, New Jersey (*Nuttall*) and Virginia! to Florida! Alabama! Louisiana! and Texas! Aug.–Oct.—Stems 1–2 feet high, slender. Lower leaves 2–3 inches long; the uppermost very short, scattered. Scales of the involucre 1-nerved, with somewhat greenish tips.—The habit is much that of the section Euthamia in Solidago, but the stems are less inclined to branch. The B. virgata appears to be only a narrow-leaved state of the ordinary plant; but it may, perhaps, be a distinct species.

41. LINOSYRIS. *Lobel; DC. prodr.* 5. *p.* 351, (& Bigelowia § 2. *DC.*)

Linosyris & Crinitaria, *Cass.*—Chrysothamnus, *Nutt.*

Heads 5–many-flowered; the flowers all perfect and tubular. Involucre campanulate, obovoid, or oblong, often shorter than the disk; the scales imbricated, mostly concave or carinate, destitute of herbaceous tips; the exterior usually looser and bracteolate, passing into the leaves. Receptacle flat, alveolate-toothed; the teeth fleshy or somewhat lacerate. Corolla with an expanding 5-cleft or 5-parted limb. Branches of the style with flat linear or oblong stigmatic portions; the pubescent appendages various in form. Achenia oblong, somewhat compressed, silky-villous. Pappus simple, of copious scabrous capillary bristles.—Perennial herbs or suffruticose plants (natives chiefly of Southern Europe, Northern Asia, and North America west of the Mississippi), branched from the base, and bearing corymbose heads at the summit. Leaves alternate, crowded, sessile, linear or oblong, mostly entire, and 1-nerved. Flowers yellow.

§ 1. *Involucre 20–30-flowered, as long as the disk.*

1. *L. Texana:* suffrutescent at the base, glabrous, not glutinous; stems and numerous branches strongly striate-angled; leaves linear, carinately 1-nerved, rather rigid; scales of the hemispherical involucre lanceolate, acute, loosely imbricated in 2 or 3 series; lobes of the deeply parted limb of the corolla lanceolate-linear, as long as the tube; appendages of the style lanceolate, thicker than the stigmatic portion, and about its length; pappus as long as the flowers.

Texas, *Drummond! Dr. Riddell!*—Stems 1–2 feet high, much branched at the summit. Leaves 1–2 inches long, less than 2 lines wide, acute, sometimes with 2 slight undulate lateral nerves, and very minutely and obscurely dotted. Heads all more or less pedicellate, with few bracteal leaves. Scales of the involucre smooth, not rigid, strongly 1-nerved, with slight scarious margins, obscurely ciliate near the apex. Receptacle alveolate-toothed; the teeth somewhat fleshy. Pappus not very copious, very soft and slender. Achenia unknown.

[illegible]

[illegible]

2. *L. Drummondii:* much branched from the suffrutescent base, glabrous, the young heads and fastigiate branchlets somewhat glutinous; stems terete; leaves narrowly linear, tapering to the base, thickish, obscurely 1-nerved; scales of the obovoid involucre closely imbricated in 4–5 series, rigid, lanceolate-oblong; the outermost passing into subulate bracts; corolla somewhat exceeding the pappus, the slender tube longer than the cyathiform 5-cleft limb; the triangular-lanceolate appendages of the style much shorter than the stigmatic portion.

Texas, *Drummond!*—Stems rigid, 8–10 inches high; the heads nearly sessile and somewhat aggregated at the extremity of short terete branchlets. Leaves an inch long and a line wide, crowded. Scales of the involucre either glutinous, or slightly pulverulent at the apex, obtusish. Stamens inserted below the middle of the tubular part of the corolla. Ovary silky-pubescent.—The achenia are immature.—Another species of this continent, L. Mexicana, is figured by Schlechtendal (*Hortus Halensis, t.* 4.), and is remarkable for its toothed leaves.

§ 2. *Involucre several-*(6–10–20-) *flowered, mostly shorter than the disk; the scales oval or oblong, concave or carinate: appendages of the style triangular or deltoid-ovate, much shorter than the flat stigmatic portion.*

This division includes the Siberian L. punctata, L. villosa, (in which the heads are only 8–10-flowered), L. Tartarica, &c.; in our specimens of the latter the heads are only 5–7-flowered.

3. *L. pluriflora:* frutescent? glabrous; branches angular; leaves very narrowly linear, somewhat attenuate towards the base, obscurely 1-nerved; heads 15–18-flowered, crowded and subsessile at the summit of the small nearly leafless branchlets, forming a compound fasciculate corymb; scales of the involucre smooth and shining, oblong-lanceolate, acute, closely imbricated, very unequal; lobes of the corolla very much shorter than the tube; appendages of the style lanceolate-ovate, obtusish.—Chrysocoma graveolens, *Torr.! in ann. lyc. New York,* 2. *p.* 211, not of *Nutt.*

Upper Missouri or Platte? *Dr. James!*—The lower part of the stem is wanting in our specimen. Leaves about 2 inches long, a line wide, obscurely impressed punctate, and a little resinous. Heads densely clustered, one-third of an inch long. Scales of the involucre small, coriaceous, with narrow scarious margins. Pappus copious, unequal. Alveoli of the receptacle lacerate-dentate.

4. *L. lanceolata:* shrubby, cinereous-puberulent; branches terete; leaves linear-lanceolate, mucronate, 3-nerved, with scabrous margins; heads 6–8-flowered, in clusters, forming a compound fastigiate corymb; scales of the involucre oval, obtuse, or abruptly somewhat acute, loosely imbricated in 3–4 series, the innermost glabrous, nearly the length of the disk; lobes of the corolla about half the length of the tubular portion; branches of the style elongated; the appendages lanceolate, acute.—Chrysothamnus lanceolatus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 324. Gaver. 267.

Rocky Mountains, on the sources of the Platte, and of Lewis River, *Nuttall!* —"A moderate-sized shrub." Leaves 1–1½ inch long, 3–4 lines broad. Heads smaller than in the preceding.

§ 3. *Involucre 5-flowered, mostly shorter than the disk; the concave or carinate scales oval or oblong-linear: appendages of the style linear-subulate, longer than the linear flat stigmatic portion.*—Chrysothamnus, *Nutt.* (Bigelowia § 2. Spuriæ, *DC.*)

5. *L. graveolens:* shrubby, very much branched; branches pulverulent-tomentose, whitish; leaves very narrowly linear, 1-nerved, glabrous; heads (large) 5-flowered, clustered; scales of the involucre few, loosely imbricated in about 3 series, glabrous, carinate; the outermost very short, ovate-oblong; the innermost elongated, linear; pappus very fine and capillary; corolla glabrous.—Chrysocoma dracunculoides, *Pursh! fl.* 2. *p.* 517, excl. char., which chiefly relates to L. punctata. C. graveolens, *Nutt.! gen.* 2. *p.* 136. Bigelowia dracunculoides, *DC. prodr.* 5. *p.* 329. Chrysothamnus dracunculoides, *Nutt. in trans. Amer. phil soc. l. c. p.* 324.

β. leaves and the outermost scales of the involucre, as well as the branches, more or less tomentose-pubescent.—Chrysocoma nauseosa, *Pursh, l. c.?* Bigelowia Missouriensis, *DC. l. c.* Chrysothamnus speciosus, *Nutt.! in trans. Amer. phil. soc. l. c.* (excl. var. β.)

On the denudated banks of the Missouri, Platte, &c. *Lewis! Nuttall!* and plains in the Rocky Mountains, *Nuttall!* Aug.—Shrub 3–5 feet high, with a heavy and unpleasant, though somewhat aromatic odor; with numerous virgate branches, like the common Broom. Flowers abundant, brilliant yellow. *Nutt.*—Heads narrow, nearly half an inch long. Corolla a little longer than the fine and scarcely scabrous, unequal and copious pappus, slightly dilated upwards; the lobes about one-fifth the length of the undivided portion. Stamens inserted low down in the tube. Appendages of the style linear-subulate, longer than the stigmatic portion. Leaves 2–3 inches long, about a line wide.

6. *L. albicaulis:* stem and branches densely lanate-tomentose, white; leaves very narrowly linear, tomentose-pubescent (at length glabrous?), 1-nerved; tube of the corolla beset with very fine long villous hairs!—Chrysothamnus speciosus β. albicaulis, *Nutt. l. c.* Chrysocoma nauseosa, *Pursh, l. c.?* [illegible] from the char.

Rocky Mountain plains near Lewis River &c., *Nuttall!*—Resembles the preceding very perfectly, except in the characters pointed out. Mr. Nuttall remarks that it is perhaps a distinct species; without noticing, however, the character upon which we should chiefly rely for distinguishing them; viz. the long cobwebby hairs of the corolla.

7. *L. viscidiflora* (Hook.): shrubby, glabrous; leaves narrowly linear, 1-nerved, rigid, very acute; heads more or less clustered, fastigiate-corymbose, 5-flowered; scales of the oblong involucre glabrous, often glutinous, oblong or oval, carinate-concave, few, rather loosely imbricated in about 3 series; the exterior very short; corolla glabrous.—*Hook. fl. Bor.-Am.* 2. *p.* 24, under Crinitaria. Bigelowia viscidiflora, *DC. prodr.* 7. *p.* 279.

β. "involucre ovate, the scales ovate and short."—Chrysothamnus pumilus β. enthamioides, *Nutt. l. c.*

γ. dwarf, much branched from the base, minutely pulverulent-pubescent or nearly smooth.—Chrysothamnus pumilus, *Nutt.! l. c.*

Barren plains of the Oregon, from the Great Falls to the Mountains, &c. *Douglas!* Lewis River and plains of the Rocky Mountains, *Nuttall!*—The plant described by Hooker is said to be a common shrub, 2–4 feet high, in the region where Mr. Nuttall obtained his Chrysothamnus pumilus: the latter is called a low shrub, about 6 inches high, and described as either glabrous or pulverulent-pubescent, with the involucre either smooth or glutinous; so that nothing of any consequence is left to distinguish it from Hooker's plant, of which we have seen no specimens. The heads are much smaller than in the preceding; the pappus of firmer hairs, and more scabrous; but the habit and structure of the plant nearly the same. [illegible] as in Torrey's [illegible]

[illegible] a var.

‡ *Doubtful Species.*

8. *L.? humilis* (Hook., under Crinitaria): branches sparsely and slightly

N. gen. Cascade Mts., Dr Lyall,

hirsute; leaves linear-lanceolate, denticulate-ciliate, mucronulate-acute; heads axillary and terminal; scales of the glabrous involucre linear; the exterior larger and foliaceous. *Hook. l. c.*

Banks of the Saskatchawan, *Drummond.*—Plant 3–4 inches high, of doubtful genus.

42. AMMODIA. *Nutt. in trans Amer. phil. soc. (n. ser.) 7. p.* 321.

Heads many-flowered; the flowers all perfect and tubular. Scales of the campanulate involucre scarious-membranaceous, linear or lanceolate, 1-nerved, imbricated in few series; the innermost as long as the disk, the outermost short, appressed. Receptacle flat, alveolate-toothed. Branches of the style subulate-filiform, the appendages longer than the flat stigmatic portion. Achenia oblong-linear, attenuate, fusiform, or somewhat compressed, pubescent. Pappus of copious minutely scabrous capillary bristles.—A perennial branching somewhat hairy herb, with the habit and appearance of Inula viscosa! exhaling a heavy odor. Leaves alternate, oblong, entire, veiny, sessile. Heads irregularly paniculate-corymbose: peduncles somewhat glandular; the pale yellow flowers nearly hid in the copious white pappus.

A. Oregana (Nutt.! l. c.)

On the sand and gravel bars of the Oregon and its tributaries, common, *Nuttall!* Aug.—Stems a foot high, many from the same root. Heads as large as in Inula viscosa. Flowers all similar; the corolla slender, slightly dilated upwards, 5-toothed. Anthers not caudate.

43. MACRONEMA. *Nutt. in trans. Amer. phil. soc. (n. ser.) 7. p.* 322.

Heads many-flowered; the ray-flowers 6–8, ligulate, pistillate, or none; those of the disk tubular, perfect. Scales of the involucre, few, loose, somewhat in 2 series, nearly equal, linear-lanceolate, 1-nerved; the exterior mostly with foliaceous spreading tips, commonly with one or more foliaceous bracts at the base resembling the upper leaves. Receptacle flat, areolate. Corolla of the disk somewhat dilated above, 5-toothed. Branches of the style much exserted; the appendages of the style (in the disk-flowers) elongated, subulate, hirsute, much longer than the linear flat stigmatic portion. Achenia large, much compressed, when mature longer than the pappus of copious somewhat unequal scabrous capillary bristles.—Low and viscidly pubescent much branched shrubby plants (natives of Oregon); the fastigiate leafy branches terminated by solitary rather large heads. Leaves alternate, lanceolate, entire, sessile. Flowers yellow.

§ 1. *Heads radiate: achenia pubescent.*

1. *M. suffruticosa* (Nutt.! l. c.): leaves oblong-linear or lanceolate, acute, somewhat narrowed towards the base; scales of the involucre mostly appendiculate; achenia oblong or slightly obovate, flat, 1–3-nerved on each side.

Sandy and gravelly banks of the Malade, a stream of the Oregon, near the Blue Mountains, *Nuttall!*—Stem 6–8 inches long, from a low woody base, leafy to the summit. Leaves an inch or more long, about 2 lines wide. Heads large, with about 30 disk-flowers and mostly 8 linear-oblong rays, "having often the same pubescent stigmas with the discal florets, and not unfrequently the rudiments of stamens." *Nutt.* Pappus ferruginous.—The heads are not unlike those of Dieteria (Pappochroma) coronopifolia.

§ 2. *Rays wanting: achenia very glabrous.* (EUGYMNA, *Nutt.*)

2. *M. discoidea* (Nutt.! l. c.): young branches tomentose; leaves subspatulate-oblong, obtuse; involucre subtended by 2–3 foliaceous linear-oblong bracts similar to the upper leaves; the inner scales membranaceous, scarious, not appendiculate; young achenia linear-oblong.

Banks of Lewis River and other tributaries of the Oregon, *Nuttall!*—Resembles the preceding. Leaves about an inch long, 2–3 lines wide. Heads 25-flowered.

44. ERICAMERIA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 318.

Heads few-flowered; the ray-flowers 3–6, ligulate, pistillate; those of the disk 7–9, tubular, perfect. Scales of the turbinate or cylindrical involucre few, imbricated, carinate-concave, chartaceous with scarious margins; the outermost short and subulate, fleshy, passing into the leaves. Receptacle small, alveolate. Corolla with a slender tube; that of the disk infundibuliform at the summit, 5-toothed. Branches of the style linear-subulate, the hirsute acute appendages much longer than the stigmatic portion. Achenia linear, slender, terete, mostly glabrous. Pappus of copious capillary bristles, entirely similar but unequal.—Dwarf and often resinous shrubby plants (natives of Oregon & California), exceedingly branched and leafy, with the aspect of Heaths. Leaves acerose or linear-subulate, crowded and fascicled, persistent. Heads small, corymbose at the extremity of the branchlets. Flowers yellow.

1. *E. microphylla* (Nutt.! l. c.): somewhat pubescent, scarcely glutinous; leaves terete, obtuse, very short, much fascicled; rays 3–4; inner scales of the involucre oblong, obtuse; achenia glabrous.—Diplopappus ericoides, *Less.*, *in Linnæa!* 6. *p.* 117. Aplopappus ericoides, *Hook. & Arn. bot. Beechey*, *p.* 146; *DC.! prodr.* 5. *p.* 346.

California, on rocks, *Chamisso! Douglas! Nuttall! &c.*—Shrub 6–12 inches high, at first cinereous-pubescent: the leaves 3–5 lines long, not unlike those of Adenostoma.

2. *E. nana* (Nutt.! l. c.): glabrous, somewhat glutinous; leaves linear-acerose, acute, channelled; rays about 4; scales of the involucre lanceolate, acute; achenia minutely hairy, somewhat compressed.

On shelving rocks in the Blue Mountains of Oregon, *Nuttall!*—Shrub scarcely a span high, densely branched, fastigiate, brittle: the rigid leaves 6–12 lines long. Pappus not very copious, in 2 series, somewhat deciduous.

3. *E. resinosa* (Nutt.! l. c.): glabrous, glutinous; branches slender, corymbose at the summit; leaves subulate-linear, acute, tapering to the base; rays about 6; the disk-flowers about 12; the limb of the corolla deeply 5-cleft; scales of the involucre lanceolate, acute; achenia hirsute when young.

With the preceding; the flowers larger and not perfectly yellow (ochroleucous); the branches more slender and open; the leaves somewhat longer and a little broader; the rays often, but not always bilabiate, with 2 strap-shaped narrow segments opposed to the 2-toothed ligule. *Nuttall.*—Pappus in a single series, the capillary bristles nearly all equal.

45. STENOTUS. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 334.

Heads many-flowered; the ray-flowers 8–12, ligulate, rather distant, pistillate; those of the disk tubular, perfect. Scales of the hemispherical involucre few, oblong-ovate or orbicular, 1-nerved, membranaceous (rarely coriaceous) with scarious margins, closely appressed and regularly imbricated in 2–3 series. Receptacle flat, alveolate-toothed. Rays oval or oblong. Corolla of the disk dilated towards the summit, deeply 5-toothed. Appendages of the style broad and flat, with the pubescent appendages various in form. Achenia oblong-turbinate, densely silky-villous. Pappus of numerous soft unequal densely scabrous capillary bristles, commonly bright white.—Dwarf suffrutescent plants of alpine aspect (natives of the Rocky Mountains, &c.), densely cæspitose, of a cinereous hue, or sometimes covered with a resinous exudation, the fastigiate stems or scapes numerous from the ligneous branching caudex, terminated by showy heads (large for the size of the plant). Leaves linear or lanceolate, 1–3-nerved, rigid, persistent, entire, alternate or crowded. Flowers bright yellow.

A group of plants well marked in habit, and doubtless generically distinct from the true Aplopappus.

§ 1. *Flowering stems or scapes somewhat simple and naked, bearing single heads: leaves cinereous: rays* 10–12: *pappus and silky hairs of the achenia bright white.*

1. *S. acaulis* (Nutt.! l. c.): leaves clustered at the summit of the thick branched caudex, spatulate-lanceolate, mucronate-acute, somewhat 3-nerved, minutely hispid-scabrous; scapes nearly leafless; scales of the nearly glabrous involucre short, oblong-ovate, acute, chartaceous, with scarious margins, somewhat in 2 series; rays short, often 2-cleft; appendages of the style in the disk-flowers subulate-linear, longer and narrower than the stigmatic portion.—Chrysopsis acaulis, *Nutt.! in jour. acad. Philad.* 7. *p.* 33, *t.* 3, *f.* 1.
Borders of Little Godin River in the Rocky Mountains, towards the sources of the Oregon, *Mr. Wyeth!* June.—"A small, tufted alpine, only 3–4 inches high." Leaves scarcely an inch long; those of the simple scape 1–2 and much smaller, or none.

2. *S. pygmæus:* very dwarf; leaves spatulate, obtuse, somewhat 3-nerved, fimbriate-ciliate; the radical as long as the simple leafy scape; head bracteate; scales of the involucre oblong, obtuse, ciliate, rather rigid; rays oblong-linear.
Rocky Mountains, probably in about lat. 41°, *Dr. James!*—Scarcely 2 inches high, slightly cinereous. Ovaries hairy. Style, &c. as in the preceding.

3. *S. armerioides* (Nutt.! l. c.): glabrous; leaves crowded at the summit of the thick woody caudex, elongated spatulate-linear, obscurely 3-nerved;

those of the simple scape 1–2; scales of the involucre roundish-oval, very obtuse, coriaceous, with abrupt scarious margins, closely imbricated somewhat in 3 series; style with short and thick lanceolate appendages.

On shelving rocks towards the sources of the Platte, *Nuttall!*—Plant a span high, with the aspect of an Armeria. Leaves very rigid, pale or whitish, but shining, 3 inches long, not 2 lines wide, sometimes a little resinous, as well as the rigid rounded scales of the involucre.

4. *S. cæspitosus* (Nutt.! l. c.): glabrous or nearly so; leaves crowded at the summit of the woody caudex, narrowly lanceolate or linear, acute, 3-nerved; those of the simple or branching scapes 3–4; scales of the involucre broadly ovate, acute, membranaceous, erose-ciliate, imbricated in 3 series; appendages of the style subulate-linear, minutely pubescent.—Chrysopsis cæspitosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 33.

Vallies of the Rocky Mountains, towards the sources of the Missouri and Platte, *Mr. Wyeth! Nuttall!* July.—Plant 4–6 inches high. Leaves perfectly smooth and glabrous, or with a few scattered hairs.

§ 2. *Leaves crowded on the somewhat ligneous branching flowering stems, often covered with a resinous exudation: rays* 12: *pappus and silky hairs of the achenia bright white.*

5. *S. linearifolius:* glabrous, much branched; the branches naked and pedunculiform at the summit; leaves narrowly linear, acute, 1-nerved, glandular-punctate; scales of the glabrous involucre lanceolate-oblong, acute, somewhat membranaceous, with broad scarious margins, in 2 series, somewhat equal, the inner as long as the disk; appendages of the style ovate, thickened, much shorter than the linear stigmatic portion.—Aplopappus linearifolius, *DC.! prodr.* 5. *p.* 347; *Hook.! & Arn.! bot. Beechey, suppl. p.* 350.

California, *Douglas!*—Leaves an inch or more in length. Head nearly an inch in diameter; the involucre looser than in the preceding.

6. *S. florifer:* stem rather short, branched, hairy; leaves all linear-spatulate, slightly hairy, entire, glaucous; heads solitary, terminating the pedunculiform branches; exterior scales of the involucre pubescent-hirsute; the interior membranaceous, fimbriate-ciliate; rays rather broad, spreading, twice the length of the involucre; bristles of the pappus very white. *Hook.*—Aplopappus florifer, *Hook. & Arn. bot. Beechey, suppl. p.* 351. Erigeron? florifer, *Hook. fl. Bor.-Am.* 2. *p.* 20.

β. leaves obovate-spatulate. *Hook. & Arn. l. c.*

Dry rocks and sandy grounds, near Priest's Rapids of the Oregon, and Lewis & Clarke's River, *Douglas!* *β.* Snake Country, *Mr. Tolmie.*—Said to be very nearly allied to A. linearifolius, but with different foliage. The description does not satisfactorily accord with any of the preceding; and the following exhibits a tawny or ferruginous pappus in the youngest state, &c.

§ 3. *Flowering stems somewhat leafy, bearing* 1 *to* 3 *obovoid fewer-flowered heads: rays* 8: *pappus ferruginous.* (Oonopsis, *Nutt.*)

7. *S. multicaulis* (Nutt.! l. c.): flowering stems numerous from a woody caudex, simple or somewhat branched, tomentose-cinereous (as well as the leaves and involucre) when young, at length nearly glabrous; leaves linear, 1-nerved; the lowest subspatulate-linear and obtuse; those of the flowering stems 3–5, acute; heads bracteate or subtended by a leaf; scales of the involucre ovate, acuminate, membranaceous (6–9), in 2 series; appendages of the style linear-oblong. = [illegible]

Rocks, on the western declivity of the Rocky Mountains, *Nuttall!*—Stems 2–4 inches long, a little longer than the tufted leaves, the latter 1–2 lines wide. Pappus scanty, of about 2 series of unequal bristles, shorter than the corolla.

46. ISOPAPPUS.

Heads several-flowered; the ray-flowers 5–12, ligulate, pistillate, those of the disk 10–20, tubular, perfect. Scales of the cylindrical-campanulate involucre lanceolate-subulate, imbricated in 2–3 series, appressed. Receptacle small, alveolate, the alveoli nearly entire. Corolla of the disk slightly dilated upwards, 5-toothed. Appendages of the style subulate, hirsute, much longer than the stigmatic portion. Achenia linear-oblong, terete, attenuate at the base, silky-villous. Pappus a single series of capillary scabrous entirely similar and nearly equal bristles.—Hirsute and scabrous loosely paniculate-branched biennial herbs, with small heads on slender peduncles. Leaves alternate, crowded, sessile, lanceolate, 1-nerved and somewhat veiny, sparsely hispid-ciliate, often sparingly serrate.

1. *I. divaricatus:* glandular-scabrous and sparsely-hispid; branches and peduncles slender, divaricate-spreading; leaves rigid, linear-lanceolate, very acute, entire or acutely and remotely serrate, tapering towards the base; scales of the oblong involucre linear-subulate, hairy; rays 5–8; the disk-flowers 7–14.—Chrysopsis divaricata, *Nutt.! gen.* 2. *p.* 152 (under Inula); *Ell.! sk.* 2. *p.* 338. C. Lamarckii, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 315. Diplopappus? (Chrysopsis) divaricatus, *Hook.! compan. to bot. mag.* 1. *p.* 97. Heterotheca Lamarckii, *DC. prodr.* 5. *p.* 317, as to spec. char. & syn. *Nutt. & Ell.;* excl. syn. *Cass. & Lam.* (which relate to Heterotheca scabra), *& Pluk. alm.*, which probably represents Chysopsis Mariana.

Dry sandy woods and fields, Georgia! to Florida! Louisiana! and Texas! Aug.–Oct.—Plant 1–2 feet high, sometimes nearly glabrous when old, with a very effuse panicle; the filiform pedicels usually minutely glandular and hispid. Heads about a quarter of an inch in length. Pappus ferruginous, not unlike that of a true Erigeron; the bristles rather numerous but in a single series, slender, entirely similar, and nearly all of equal length, a very few being more or less shorter.—On account of the entirely simple pappus of this plant, and its peculiar habit, Mr. Elliott long since suggested the propriety of separating this plant from Chrysopsis, but he evidently did not intend to include it in his genus Calycium, as De Candolle supposed. It is most nearly allied to the doubtful section of Aplopappus, or perhaps genus, Blepharodon, *DC.;* which, however, has many-flowered heads, a copious pappus of unequal bristles, &c.

2. *I. Hookerianus:* stem branched from the base, and with the somewhat spreading branches roughish-hirsute, not glandular; leaves oblanceolate or oblong-spatulate, fringed with bristles along the attenuate base or margined petiole, obscurely serrulate towards the apex, mucronulate, nearly glabrous; scales of the short campanulate involucre almost glabrous, subulate-lanceolate; rays 12; the disk-flowers about 20.

Gonzales, Texas, *Drummond!*—Stems about 10 inches high; the leaves somewhat scattered; the branches bearing few heads on erect peduncles. Pappus ferruginous.—Only a few specimens having been collected, this species is not to be found in many of the sets of the late Mr. Drummond's

a – [illegible]

form of this; but not [illegible]

Pers. paniculata, [illegible]

plants. The specimens we have examined are in the herbarium of Sir Wm. Hooker.

47. APLOPAPPUS. *Cass.; DC. prodr.* 5. *p.* 345, excl. spec.

Heads many-flowered; the ray-flowers numerous, ligulate, pistillate, sometimes wanting; those of the disk tubular, perfect. Scales of the involucre lanceolate or linear, imbricated. Receptacle flat, foveolate, or alveolate and somewhat fimbrillate. Achenia silky, somewhat terete, oblong or turbinate. Pappus of copious unequal and more or less rigid scabrous bristles.—Mostly perennial herbs or suffruticose plants (chiefly natives of the Andes and the Pacific coast of America); with alternate usually serrate or spinulose-toothed leaves. Heads solitary or somewhat corymbose. Flowers yellow.

We have no species which entirely accord with the Chilian Euaplopappi. Some of the Aplodisci are most nearly allied to them, except that they have no rays; but the presence or absence of rays appears to be of minor consequence when the capitula are homochromous. Perhaps Pyrrocoma and Prionopsis hardly deserve the rank of genera, but it is more convenient to separate them.

§ 1. *Scales of the hemispherical or campanulate involucre linear-lanceolate: achenia obovoid-oblong or turbinate, silky-villous: pappus of copious and very unequal but nearly capillary bristles: perennial or suffrutescent: leaves pinnately lobed or incised; the lobes or teeth pointed with bristles.*—BLEPHARODON, DC. (excl. no. 9.)

1. *A. rubiginosus:* suffruticose? branching from the base, viscidly pubescent and cinereous; leaves lanceolate or narrowly oblong, mostly narrowed at the base, sessile, laciniate-incised; the divaricate teeth produced into pellucid bristles; heads subglobose, solitary or corymbose, terminating the leafy branches, often bracteate; scales of the involucre linear, acute, viscidly puberulent, in about 2 series, nearly equal, loose, at length spreading; achenia turbinate, densely silky-villous; pappus bright reddish-brown.

Texas, *Drummond!*—Stems erect or decumbent, corymbosely branched, about 10 inches high. Heads rather smaller than in Chrysopsis Mariana, on short stout peduncles. Rays 15–18, elongated. Scales of the involucre tipped with a bristle. Alveoli of the receptacle pilose-fimbrillate. Corolla of the disk-flowers dilated at the throat, rather deeply toothed. Appendages of the style oblong-ovate, broader and much shorter than the stigmatic portion. Achenia silky-canescent. Bristles of the pappus in about 3 series of unequal length.—Allied apparently to A. phyllocephalus, *DC.*, of Mexico.

2. *A. spinulosus* (DC.): herbaceous; canescent with a soft minute woolly pubescence, or at length almost glabrous; stems many from the same root, corymbosely branched above; leaves (small) rigid, pinnately or somewhat bipinnately parted; the segments short, linear-subulate, mucronate with a short bristle; heads subglobose, terminating the numerous branchlets; involucre shorter than the disk; the scales subulate-lanceolate, mucronulate, imbricated in 3–4 series, appressed, canescent; achenia turbinate, villous; pappus (pale or tawny) very unequal.—*DC. l. c.*—Amellus? spinulosus, *Pursh, fl.* 2. *p.* 564, (but the descr. does not perfectly accord); *Torr.! in ann. lyc. New York*, 2. *p.* 213. Starkea? pinnata, *Nutt.! gen.* 2. *p.* 169. Diplopappus pinnatifidus, *Hook.! fl. Bor.-Am.* 2. *p.* 22. Dieteria spinulosa, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 301.

Plains of the Missouri to the Rocky Mountains! Aug.–Sept.—Stems 1–2 feet high. Leaves an inch or more in length. Heads small. Rays 20–30. Corolla of the disk with very short teeth. Style nearly as in the preceding, but the appendages as long as the stigmatic portion. Pappus short, rather rigid, very unequal, in about 3 series.

§ 2. *Scales of the hemispherical involucre lanceolate, more or less imbricated: achenia oblong or turbinate, villous: pappus of unequal and strongly scabrous but almost capillary bristles: stems low, scape-like, from a fusiform caudex, bearing solitary or few rather large heads: leaves chiefly radical, petioled, lanceolate, mostly with cartilaginous or spinulose teeth.*—ARNICELLA.

* *Scales of the involucre lanceolate-oblong, chartaceous, unequal, imbricated in* 3 *series: pappus shorter than the corolla of the disk.*

3. *A. lanceolatus:* stem and petioles at first lanuginous, at length nearly glabrous; leaves coriaceous; the radical and lowest cauline lanceolate, acute, irregularly spinulose-toothed, petioled; the upper small and bract-like, linear-lanceolate, partly clasping; heads 2–5; achenia silky.—Donia lanceolata, *Hook.! fl. Bor.-Am.* 2. *p.* 25. Homopappus (Actinaphoria) multiflorus, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 333.

Saskatchawan, *Drummond!* Plains both east and west of the Rocky Mountains in about lat. 41°, *Nuttall!*—Plant from 6 to 24 inches high. Appendages of the style lanceolate, about the length of the stigmatic portion. Rays 20 to 25, pistillate, and to all appearance fertile.

* * *Scales of the involucre linear-lanceolate, herbaceous, nearly equal, loose, in about* 2 *series: pappus not very copious, as long as the corolla of the disk.*

4. *A. uniflorus:* somewhat woolly when young, at length glabrous; leaves rigid; the radical lanceolate, acute, sparingly and coarsely spinulose-toothed, or some of them entire, petioled; the cauline linear-lanceolate, partly clasping; heads commonly solitary; involucre at length nearly glabrous; achenia silky-villous.—Donia uniflora, *Hook.! fl. Bor.-Am.* 2. *p.* 25, *t.* 124. Homopappus uniflorus, *Nutt. l. c.*

Plains of the Saskatchawan and prairies of the Rocky Mountains, *Drummond!*—Stems 5–10 inches high, from a thick caudex. Appendages of the style oblong-lanceolate. Rays 25–30, fertile.

5. *A. inuloides:* tomentose-woolly throughout; the pubescence mostly persistent; leaves lanceolate, acute, entire, or sparingly spinulose-serrulate; the radical tapering to the base but nearly sessile; heads usually solitary; involucre very woolly; achenia villous.—Homopappus (Actinaphoria) inuloides, *Nutt.! in trans. Amer. phil. soc. l. c.*

Moist grassy plains of the Rocky Mountains, towards the sources of the Platte, *Nuttall!*—Plant 3–4 inches to a foot high. Rays 40–50, *Nutt.*—Appendages of the style lanceolate-subulate. The rays are pistillate and apparently fertile. The species is very nearly allied to the preceding, and perhaps not distinct.

6. *A.? alpigenus:* caudex thick, branched; radical leaves narrowly spatulate or oblanceolate, obtuse, entire, somewhat petioled, about 3-nerved, glabrous; the cauline few and small, linear, 1-nerved, slightly pubescent; head solitary, terminating the short ascending scapiform stems; scales of the involucre linear, rather acute, pubescent, loosely imbricated in a double series; the exterior a little shorter; achenia oblong-linear, at length nearly glabrous.

On Mount Ranier, Oregon! collected either by *Douglas* or *Mr. Tolmie;* the specimen communicated by Sir Wm. Hooker.—Stem or scape 3–4 inches high, bearing 3 or 4 small leaves below the middle, tomentose-pubescent near the summit. Radical leaves 1–3 inches long, apparently rather fleshy. Heads nearly as large as in A. uniflorus, to which it is manifestly allied; from which we infer the ray (twice the length of the involucre) to have been yellow, which is uncertain from the specimen. Pappus whitish, barbellate-scabrous. Achenia at first villous-pubescent, the hairs deciduous. Appendages of the style elongated-subulate, much longer than the stigmatic portion.

§ 3. *Rays wanting.*—APLODISCUS, DC.

* *Involucre obconical, as long as the disk; the scales regularly imbricated in 4–5 series, oblong, with narrow scarious margins, and slightly herbaceous and spreading tips: corolla dilated at the summit, the teeth spreading.* (Aplodiscus, *DC.* Isocoma, *Nutt.*)

7. *A. Menziesii:* stem suffruticose; the branches elongated, simple, somewhat pubescent; heads in terminal corymbose clusters; leaves oblanceolate or linear-spatulate, impressed-punctate, somewhat fleshy, glabrous, spinulose-serrate towards the apex, often fascicled in the axils; appendages of the style ovate, acute, much shorter than the stigmatic portion; achenia silky.—Pyrrocoma Menziesii, *Hook. & Arn. bot. Beechey, suppl. p.* 351. Isocoma vernonioides, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 320.

California, *Menzies.* Common in marshes near the sea, at St. Barbara, *Nuttall!* April–May.—Plant 1–2 feet high.

* * *Involucre elongated obconical; the oblong-linear scales regularly imbricated in numerous series on the slender cylindrical rachis, with herbaceous squarrose tips, the innermost as long as the disk: corolla not dilated at the summit.*

8. *A. squarrosus* (Hook. & Arn.): slightly pubescent, somewhat resinous or glutinous; stem shrubby, branched; heads crowded or spicate at the summit of the branches and in the upper axils; leaves crowded, obovate-oval, rigid, 1-nerved, obscurely veined, closely serrate with mucronate spreading teeth, very obtuse, partly clasping; appendages of the style ovate-lanceolate, as long as the stigmatic portion; achenia nearly glabrous.—*Hook. & Arn.! bot. Beechey, p.* 146*; DC. prodr.* 7. *p.* 280. Pyrrocoma grindelioides, *DC.! prodr.* 5. *p.* 350*; Hook. & Arn.! l. c. suppl. p.* 351.

California, *Capt. Beechey, Douglas! &c.* Plant with the habit of some species of Baccharis. Leaves of the branches an inch long. Heads two-thirds of an inch in length. Receptacle narrow.

* * * *Involucre hemispherical, as long as the disk; the scales lanceolate, imbricated in about* 3 *series, appressed: corolla longer than the very unequal pappus, not dilated at the summit,* 4–5*-toothed.* (Eriocarpum, *Nutt.*)

9. *A. Nuttallii:* cinereous-tomentose, dwarf; stems numerous from a woody base or caudex, leafy, bearing several somewhat corymbose (small) heads; leaves cuneiform-oblong, sessile, serrate-toothed, the teeth ending in bristles, when old somewhat glabrous; appendages of the style oblong-lanceolate; achenia silky-villous.—Eriocarpum grindelioides, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 321.

On shelving rocks in the Rocky Mountain range, Oregon, *Nuttall!*—Plant about 6 inches high, with the habit, pappus, &c. of a genuine Aplopappus. Alveoli of the receptacle strongly toothed.

48. PYRROCOMA. *Hook. fl. Bor.-Am.* 1. *p.* 306, *t.* 107.

Sect. Eupyrrocoma § Bracteosæ, *DC.*—Homopappus (partly) & Pyrrocoma, *Nutt.*

Heads many-flowered; the ray-flowers numerous, pistillate, but sometimes infertile or inconspicuous; the disk-flowers tubular, perfect. Scales of the hemispherical or campanulate involucre rigid, somewhat foliaceous, nerveless, oblong, with more or less squarrose or herbaceous tips. Receptacle flat, alveolate-toothed. Corolla of the disk cylindrical, slightly dilated upwards, with short erect teeth. Branches of the style in the disk-flowers subulate-linear, elongated, the hispid appendages much longer than the stigmatic portion; those of the ray often unequal or one of them abortive, glabrous. Achenia linear, elongated, somewhat 3-angled and striate, glabrous, rarely hairy. Pappus (reddish-brown or fulvous) of copious and uniform slender rigid bristles, usually longer than the corolla of the disk, expanding.—Perennial rigid herbs (natives of Oregon), with simple stems; the showy heads terminal or in the axils of the upper leaves, often sessile. Leaves coriaceous, alternate, lanceolate or oblong, sessile, 1-nerved, reticulate-veined, obscurely pellucid-punctate, sharply serrate or entire. Flowers yellow.

§ 1. *Heads very large and broad, with foliaceous bracts; the rays slender, concealed in the pappus or exserted (the margins involute in dried specimens), infertile.*—EUPYRROCOMA.

1. *P. carthamoides* (Hook.! l. c.): stem (and young leaves) pubescent, terminated by a single bracteate head; leaves oblong-lanceolate, mucronate-acuminate, sparingly spinulose-serrulate; the lowest tapering into slender petioles; bracts similar to the uppermost leaves, as long as the proper involucre; corolla of the ray and disk shorter than the pappus.—*DC.! prodr.* 5. *p.* 350.

Oregon, (in the interior?) *Douglas!*—Stem rather stout, a foot or more high. Head more than an inch in diameter; the proper scales of the involucre oblong, imbricated in 3 to 4 series, shorter than the disk.—The close resemblance of this plant to the following radiate species induced us to examine it more attentively; and we find that the head is not truly discoid, as has been supposed; but there is an outer series of rays, which are so concealed in the pappus as readily to escape observation. One of the branches of the style in these flowers is suppressed or abortive; the other is stigmatose, but the ovary is apparently infertile.—It is not improbable that the rays will be found to be sometimes a little exserted.

2. *P. radiata* (Nutt.): very glabrous; leaves shining, reticulated, clasping; the radical (petioled) and lower cauline obovate-oblong, entire; the upper ovate-lanceolate or oblong, sparingly spinulose-serrate or entire; heads usually several and somewhat corymbose; bracts fewer, passing into the scales of the involucre; rays (about 25) exserted; the corolla of the disk as long as the pappus.—*Nutt.! in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 333.

Plains of Oregon near Walla-wallah, *Nuttall!*—Stem stout, 12–18 inches high. Leaves very thick, 3–6 inches long, the lower 2 inches broad. Heads nearly as large as in Inula Helenium! Involucre much like that of Liatris scariosa; but the scales not dilated above, and acutish, imbricated in 5 or 6

These two [illegible]
one species. [illegible]

series, more or less subtended with foliaceous bracts, shorter than the disk. Rays very narrow, rigid, exserted, but inconspicuous. Achenia fully a third of an inch long, about the length of the rigid expanding pappus; the bristles of which are barbellate-scabrous (more so than the preceding), some of them very obscurely thickened towards the apex.—The exterior covering of the fruit, or calyx-tube, as in the whole genus, is readily separable from the proper ovary.

§ 2. *Heads smaller and fewer-flowered: the involucre scarcely bracteate; the rays manifest, and usually fertile.*—Homopappus, Nutt. (excl. spec.)

* *Heads hemispherical: involucre imbricated in 3 series, shorter than the disk: achenia sparsely hirsute.*

3. *P. racemosa:* stem glabrous, bearing several (3–7) racemose heads at the summit; the peduncles and the ovate-oblong scales of the involucre pubescent; leaves glabrous, lanceolate, slightly spinulose-serrate; the upper acute, oblong-lanceolate, partly clasping; the lower tapering to the base, somewhat petioled; corolla of the disk shorter than the pappus.—Homopappus (Myrianthus) racemosus, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 332.

Plains of the Wahlamet, *Nuttall!*—Plant 12–18 inches high. Entirely a Pyrrocoma; but the heads reduced in size (less than an inch in diameter); the involucre of fewer scales, and not subtended by leafy bracts; the rays (15–20) rather conspicuous and fertile; and the achenia hairy.

* * *Heads obovoid, sessile and often clustered: involucre as long as the disk; the scales linear-oblong, with short distinct herbaceous tips, imbricated in several series: achenia glabrous.* (Intermediate between Pyrrocoma and Aplopappus.)

4. *P. paniculata:* glabrous; stem branched at the summit; the heads sessile and somewhat clustered along the branches, about the length of the bracteal leaf; scales of the involucre oblong, obtuse, mucronate; rays 10–12, slender; young achenia slightly hairy towards the summit; leaves oblong-lanceolate, mucronate, obscurely and remotely serrulate; the cauline partly clasping.—Homopappus paniculatus, *Nutt.! l. c.*

Plains of the Oregon near Walla-wallah, in wet places, *Nuttall!*—Plant a foot high; the leaves (entirely like a genuine Pyrrocoma) and involucres, as also in the following species, often slightly covered with a resinous exudation. Heads numerous, more than half an inch long; the rays fertile.

5. *P. arguta:* glabrous; heads axillary and terminal, clustered, sessile; scales of the involucre lanceolate, acute; rays 10–12; leaves spatulate-lanceolate, somewhat acuminate, sharply serrate, the cauline partly clasping. *Nutt.*—Homopappus argutus, *Nutt.! l. c.*

Plains of the Oregon, with the preceding, *Nuttall!*—Very similar to the following, according to Nuttall: it appears to us more closely to resemble the preceding species. The rays in the specimens which we have examined are entirely neutral.

6. *P. glomerata:* glabrous; stem simple or branched; the heads (short) clustered and disposed in an interrupted spike; scales of the involucre oblong, obtuse; rays 8–10; leaves oblong-lanceolate, the lower spatulate-lanceolate, very acute, mostly entire; the cauline partly clasping.

Plains of the Oregon, with the preceding, *Nuttall!*—Heads nearly as broad (half an inch) as long. Rays fertile.

49. PRIONOPSIS. *Nutt. in trans. Amer. phil. soc. (n. ser.) 7. p.* 329.

Heads broadly hemispherical, many-flowered; the rays numerous (in a single series), ligulate, pistillate; those of the disk tubular, perfect, but more or less infertile. Scales of the involucre very numerous, lanceolate, cuspidate, somewhat unequal, the exterior squarrose and foliaceous. Receptacle broad and flat, slightly alveolate. Corolla of the disk slightly dilated upwards, 5-toothed. Appendages of the style in the disk-flowers lanceolate-oblong, obtuse, rather short. Achenia short, very glabrous, somewhat striate, turgid; in the ray oval; in the disk cylindrical-oblong, or the infertile oblong-linear. Pappus deciduous, composed of copious and very unequal rigid scabrous bristles; the inner series (5–10) setose and stronger than the others, longer than the corolla (of the disk) and much longer than the achenia; the others successively shorter and more slender.—Stout biennial plants, with the aspect and spinulose-toothed leaves of Grindelia. Heads large and showy: flowers yellow.

The short and very smooth achenia, and the deciduous pappus, form the chief, if not the only distinctions between this genus and true Aplopappus: we are not sufficiently acquainted with the South American species to judge of the importance of these characters. The perennial species from Florida here subjoined, has short and glabrous ovaries, but perhaps a persistent pappus: if so, this genus should probably be considered a section of Aplopappus.

1. *P. ciliata* (Nutt.! l. c.): glabrous; stem stout, simple or sparingly branched; leaves elliptical, very obtuse, partly clasping, somewhat veiny, closely and sharply serrate-toothed, the teeth all pointed with bristles.—Donia ciliata, *Nutt.! in jour. acad. Philad.* 2. *p.* 118; *Hook. exot. fl.* 1. *t.* 45. Aplopappus (Leiachenium) ciliatus, *DC.! prodr.* 5. *p.* 346.
Arkansas, on the alluvial banks of Great Salt River, *Nuttall!* Texas, *Drummond!* Aug.–Oct.—Stem about 3 feet high. Involucre an inch in diameter, somewhat glutinous. Pappus of the ray rather shorter than in the disk, often deciduous in a ring. Inner bristles of the pappus terete, attenuate from the base to the middle, and thence obscurely thickened upwards; the outermost very slender and scarcely exceeding the achenia, the others intermediate in size, &c.

2. *P.? Chapmanii:* stems simple, virgate, hirsute-pubescent; leaves erect, numerous, narrowly lanceolate or linear, glabrous, pungently acute, setaceously serrate; the radical ones elongated; the uppermost short, somewhat hairy, appressed; scales of the involucre lanceolate, very acute or cuspidate, squarrose; rays elongated.
Swamps in pine barrens, Middle Florida, *Dr. Chapman!* June–July.—♃ Stem 1–2 feet high, bearing 1 to 3 or 4 heads. Leaves slightly nerved; the radical ones clustered, 4–6 inches long, tapering to the base, sometimes entire; the cauline successively decreasing in length, serrate with scattered bristly teeth, much as in Eryngium aquaticum. Head about three-fourths of an inch in diameter; the involucre rather shorter than the disk. Receptacle broad and flat, slightly alveolate and fimbrillate. Rays 30–40, narrowly linear. Appendages of the style in the disk-flowers narrowly lanceolate, longer than the stigmatic portion. Achenia (immature) very short. Pappus rigid, ferruginous, nearly as in the preceding, but the bristles less unequal.—We have not seen the mature achenia, and are not entirely sure that the rays are yellow.

50. CENTAURIDIUM.

Heads many-flowered; the ray-flowers about 20, ligulate, pistillate; those of the disk tubular, perfect. Involucre subglobose; the scales (few) closely imbricated in 2–3 series, appressed, coriaceous at the base, the upper herbaceous portion dilated rhombic-ovate, cuspidate or mucronate; the inner with scarious margins. Receptacle flat, strongly fimbrilliferous; the subulate fimbrillæ nearly the length of the achenia. Corolla of the disk somewhat dilated above, 5-toothed. Appendages of the style (in the disk-flowers) subulate-filiform, hispid, 3–4 times the length of the linear-oblong flat stigmatic portion. Achenia short, obovoid-turbinate, obscurely 4-sided, minutely appressed-pubescent. Pappus persistent, spreading when old, composed of 10 subulate-filiform rigid bristles, which are flattened and dilated towards the base, minutely scabrous above, longer than the corolla (of the disk) and twice the length of the achenia, 10 similar but smaller ones nearly one-half shorter, and usually about 5 still smaller and exterior.—An annual or biennial glabrous herb; the stem and fastigiate branches slender, rather thickly clothed with linear-lanceolate 1-nerved cuspidate-acute alternate leaves with scabrous margins, and terminated by solitary small heads. Flowers apparently light yellow.

C. Drummondii.

Texas, *Drummond! Dr. Riddell!*—Plant 20–30 inches high; the virgate branches minutely scabrous. Leaves erect, pale, about an inch long, sessile, the lower sometimes very slightly serrate. Heads half an inch in diameter; the rays linear-lanceolate, elongated. Fimbrillæ of the receptacle white, chaffy, united only at the base, setaceous, not unlike the pappus. Achenia about a line and a half long, all fertile, but those of the ray often larger than the others, or perhaps maturing earlier; the setiform-subulate definite pappus radiate-spreading in fruit. Heads in appearance not unlike some species of Centaurea.

51. GRINDELIA. *Willd. mag. nat. Berl.* 1807, *p.* 261; *Dunal, mem. mus. Par.* 5. *p.* 48; *DC. prodr.* 5. *p.* 314.

Donia, *R. Br.* (1813)—Demetria, *Lagasca*, (1814.)

Heads many-flowered; the ray-flowers ligulate, pistillate, in a single series (or very rarely wanting); those of the disk tubular, perfect. Involucre hemispherical or subglobose; the scales numerous and imbricated in several series. Receptacle flat, foveolate. Corolla of the ray elongated; of the disk tubular-infundibuliform, 5-toothed. Branches of the style linear, rather acute, the hairy appendages as long as the stigmatic portion. Achenia obovate or oval, somewhat angled, glabrous. Pappus of few (2–8) rigid or corneous bristles or awns, very deciduous.—Perennial, biennial? or suffruticose plants (all American, and chiefly Mexican); with the stems mostly branched. Leaves entire or serrate, somewhat pellucid-punctate or reticulate-punctate; the radical ones usually spatulate; the cauline sessile or partly clasping.

Heads solitary at the extremity of the branches; the involucre, and often the branchlets, as well as the (yellow) corolla, &c. covered with a glutinous varnish, particularly when young. Disk-flowers sometimes infertile.

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1. *G. cuneifolia* (Nutt.): herbaceous? glabrous; leaves entire (the lower unknown), cuneate-oblong, or the uppermost linear-oblong, mucronate-acute, partly clasping, somewhat fleshy, pellucid-(reticulate-) paniculate; heads (rather large) leafy at the base; scales of the involucre with linear-subulate recurved-squarrose appendages; pappus of 5 or 6 short and stout nearly terete bristles.—*Nutt.! in trans. Amer. phil. soc. l. c.* G. squarrosa *β*. fol. subinteg. carnosula opaca, *Hook. & Arn. bot. Beechey, p.* 147.

California, at St. Barbara, *Nuttall!*—Mr. Nuttall obtained only imperfect specimens, and thinks the plant may perhaps be only a variety of G. glutinosa. The thick awns of the pappus are considerably shorter than the corolla, and not at all angled or scabrous.

2. *G. inuloides* (Willd.): stem suffruticose at the base, branching and pubescent or hirsute-pubescent above; cauline leaves ovate-oblong, rather glabrous, broader and cordate at the base, partly clasping, obtuse or rather acute, evenly serrate-toothed; scales of the involucre glabrous, produced into linear-subulate spreading or recurved appendages; bristles of the pappus 1–3.—*Willd. l. c. p.* 261, *& enum.* 2. *p.* 894; *Dunal! l. c. t.* 15; *Bot. reg. t.* 248; *DC. prodr.* 5. *p.* 315; *Hook.! bot. mag. t.* 3737. G. pubescens, *Nutt.! in jour. acad. Philad.* 7. *p.* 74. G. spathulata, *Link, enum.*, ex *DC.* Aster spathulatus, *Hort. Madr.! &c.* Demetria spathulata, *Lagasca, elench. hort. Madr.* (1814) *p.* 20. Inula serrata, *Pers.*

β. branches, leaves, and involucre glandular-hairy. *Hook. fl. Bor.-Am.* 2. *p.* 25, under Donia.

γ. leaves ovate-oblong or elliptical, obtuse; the upper finely pectinately serrate, mostly tipped with glands; achenia of the disk often sterile.—G. microcephala, *DC. l. c.?* (which is said to have a pappus of 4–5 bristles.)

Texas, *Berlandier! Drummond!* (*α*. & *γ*.) Arkansas, *Nuttall! β*. Sources of the Wahlamet, *Douglas*, ex *Hook*. Aug.–Oct.—Sent many years ago by Sessé from Mexico to the Botanic Garden of Madrid; not uncommon in cultivation.

3. *G. hirsutula* (Hook. & Arn.): stem herbaceous, glabrous below, hairy towards the summit; cauline leaves sessile and partly clasping, oblong, obtuse, sharply serrate-toothed, the younger pubescent; inner scales of the involucre glutinous, appressed; the exterior tomentose-pubescent, squarrose; bristles of the pappus 2–3.—*Hook. & Arn.! bot. Beechey, p.* 147, *& suppl. p.* 351; *DC. prodr.* 7. (*mantiss.*) *p.* 278. G. rubricaulis, *DC. prodr.* 5. *p.* 316.

California, *Capt. Beechey, Douglas!*—Stem and elongated nearly simple branches purplish. Leaves rigid, 1–3 inches long, narrowly oblong, the lower oblong-spatulate, reticulate-punctate.

4. *G. robusta* (Nutt.): very glabrous; stem herbaceous; leaves oblong, very obtuse, coarsely serrate, cordate-clasping; involucre leafy at the base; the scales produced into recurved-squarrose subulate-linear appendages; pappus of 2 (or more?) bristles.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 314.

St. Pedro, California, *Nuttall!* April.—A very stout and robust species, about 18 inches high, apparently biennial. Leaves about an inch broad, one and a half [to 2 inches] long. Heads very large, more than twice the size of those of G. squarrosa, which this species much resembles; but the leaves are broadest at the base. *Nutt.*

5. *G. squarrosa* (Dunal): herbaceous or nearly so, glabrous; stem corym-

bosely branched; leaves oblong or oblong-lanceolate, obtuse, slightly or finely serrate (seldom spinulose-toothed), somewhat clasping; scales of the glutinous involucre with recurved-squarrose or mostly circinate subulate tips; bristles of the pappus 2–4.—*Dunal, l. c. p.* 50; *Richards. appx. Frankl. journ. ed.* 2. *p.* 33; *Torr.! in ann. lyc. New York*, 2. *p.* 212; *DC.! l. c.* Donia squarrosa, *Pursh, fl.* 2. *p.* 559; *Bot. mag. t.* 1706; *Nutt.! gen.* 2. *p.* 163; *Hook.! fl. Bor.-Am.* 2. *p.* 25. Aurelia amplexicaulis, *Cass.*, ex *DC.*

Dry plains, from the Upper Missouri! to the Rocky Mountains! and north to Saskatchawan! extending, according to Richardson, into the woody country between lat. 54° & 64°. July–Oct.—Plants 10–20 inches high. Leaves of a pale glaucous hue, small. Heads numerous, small; the involucre not exceeding half an inch in diameter in the wild plant.

6. *G. lanceolata* (Nutt.): herbaceous, glabrous; stem fastigiately and virgately branched; leaves lanceolate, acute, closely sessile, coarsely spinulose-serrate or incisely toothed; scales of the involucre with subulate-filiform straight appendages, nearly equal in length; the exterior loose; pappus mostly of 2 bristles.—*Nutt.! in jour. acad. Philad.* 7. *p.* 73.

β. leaves linear, sparsely spinulose-serrulate, or the upper entire.

γ.? leaves short, oblong-lanceolate, partly clasping, spinulose-serrulate; scales of the involucre with shorter appendages, more unequal and appressed.

Plains of Western Arkansas! Louisiana! and Texas! (*α.* & *β. Nuttall! Dr. Pitcher! Dr. Leavenworth! Drummond!*) *γ.*? Texas, *Drummond!* Sept.—Plant 1–3 feet high; with larger heads than the preceding, very glutinous; the elongated appendages of the involucral scales not recurved and circinate, but straight, spreading, or reflexed when old. Leaves pale, rigid; the lower incisely spinulose-serrate, or sometimes almost pinnatifid, 2–3 inches long. We have only seen an imperfect specimen of the doubtful var. *γ.*

7. *G. integrifolia* (DC.): stem herbaceous, with a few scattered hairs towards the summit; leaves puberulent or nearly glabrous, entire, with scabrous margins; the upper ones lanceolate, acute, broadest at the partly clasping base; the lower somewhat spatulate-oblong, rather obtuse, often slightly serrate; scales of the glutinous involucre produced into slender subulate-filiform spreading appendages; bristles of the pappus mostly 2.—*DC.! prodr.* 5. *p.* 315. Donia glutinosa, *Hook.! fl. Bor.-Am.* 2. *p.* 25, (excl. syn.)

β. virgata: stem more slender and virgately branched; leaves narrowly lanceolate; heads smaller.—G. virgata, *Nutt.! in trans. Amer. phil. soc. l. c.*

Oregon, common, *Dr. Scouler! Douglas! Nuttall!*—② Stem 3–4 feet high; the branches and upper leaves as well as the involucre and corolla, &c., more or less glutinous. The leaves rather thin. Heads about as large as in G. squarrosa, or in var. *α.* larger; the exterior scales with long filiform appendages.

8. *G. stricta* (DC.): stem herbaceous, strict, somewhat simple, glabrous at the base, sparingly hairy at the summit; cauline leaves much attenuate and entire at the base; the summit oblong, acuminate, serrate; scales of the involucre erect, linear, acuminate. *DC. prodr.* (*mantiss.*) 7. *p.* 278.

Port Mulgrave, on the North West Coast, *Hænke*, fide *De Candolle.*—This species is unknown to us; and there is so much confusion and uncertainty respecting the origin of the specimens in Hænke's collection, that we cannot be confident as to the habitat. The character nearly accords with G. humilis, except the somewhat hairy stem and erect scales of the involucre.

9. *G. humilis* (Hook. & Arn.): diffusely branched from the base, dwarf, herbaceous, glabrous; the stems mostly simple; leaves resinous-dotted, linear-spatulate or oblanceolate; the radical and lower cauline with a long attenuate base, the uppermost reduced to bracts; heads small; scales of the involucre with subulate squarrose-recurved appendages.—*Hook. & Arn. bot. Beechey, p.* 147.

[illegible] leaves

α. cauline leaves entire or nearly so.—G. nana β. integrifolia, *Nutt.!* in *trans. Amer. phil. soc. l. c.* [illegible]

β. leaves spinulose-toothed.—G. nana, *Nutt.! l. c.*

California, *Capt. Beechey*. Oregon near Fort Vancouver, *Nuttall!*—Stems 5–8 inches high, numerous from a perennial? root. Involucre nearly as in G. squarrosa. Rays about 16.

[illegible] DC.

10. *G. discoidea* (Nutt.): herbaceous, perennial, glabrous; stems several from the same root, slender, fastigiately branched; leaves oblong-linear, tapering to the base, sessile, somewhat spinulose-serrulate above; heads small; scales of the involucre with short subulate squarrose-recurved appendages; pappus of 2 bristles; rays none.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 315. or none

Banks of the Oregon, *Nuttall!*—Heads rather smaller than in G. squarrosa, terminating the slender stems (a foot high) or branches. Leaves 2–3 lines wide.

52. PENTACHÆTA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 336.

Heads many-flowered; the ray-flowers ligulate, numerous, in a single series (in 2–3 series, *Nutt.*); those of the disk tubular, perfect and fertile. Involucre hemispherical; the scales lanceolate, mucronate-acuminate, membranaceous, with broad scarious margins, loosely appressed and imbricated in 2–3 series. Receptacle convex, naked, areolate. Corolla of the ray oblong; of the disk tubular-infundibuliform, slightly incurved (the proper tube very short), unequally 5-cleft at the summit, the sinuses of the exterior lobe deepest; the lobes oblong-lanceolate, spreading. Anthers (naked at the base) tipped at the apex with a mucronate appendage. Branches of the style in the ray-flowers linear, glabrous, slightly exserted beyond the tube, stigmatose to the summit; of the disk consisting of a very short and flat stigmatic portion, terminated by a long subulate-filiform strongly barbellate-hispid appendage. Achenia oblong, hirsute, obscurely 5-angular. Pappus of the ray and disk similar, consisting of 5 elongated rigid scabrous bristles slightly dilated (and obscurely connected?) at the base, persistent.—A small and slender much branched annual; the branches terminated by solitary heads. Leaves alternate, numerous, sessile, filiform-linear, involute when dry, and like the stem furnished with scattered villous hairs, otherwise glabrous. Flowers golden yellow.

P. aurea (Nutt.! l. c.)

St. Diego, California, in dry plains near the sea. Flowering in April.—A very elegant, though often minute plant, from 2–3 inches to a foot high, branching usually from the base in an umbellate manner. Head about the size of a daisy, almost orange-yellow, with 20–50 rays much longer than the disk. . . Habit of some of the Chilian species of Chætanthera. Allied to the Mutisiaceæ, but with the stigma of Aster. *Nuttall.*—Involucre almost exactly as in Bradburia (which it also resembles in foliage and habit), but with fewer scales, with the central portion greenish. Rays simple, 4-nerved. Bristles of the pappus as in Elephantopus, but more abruptly dilated at the base; the habit also (not unlike some Pectideæ) and bilabiate corolla of the disk, would seem to indicate an affinity with the Vernoniaceæ. But the style is certainly that of Asteroideæ, although the appendages are unusually narrow and prolonged.

Subdiv. 4. HETEROTHECEÆ, *DC.*—Rays in a single series. Pappus of the disk and ray dissimilar.

53. BRADBURIA. *Torr. & Gray;* not of *Raf.*

Heads many-flowered; the ray-flowers ligulate, pistillate, fertile, in a single series; those of the disk perfect but infertile. Involucre hemispherical-campanulate; the scales oblong-lanceolate, mucronate, membranaceous, shining, with broad scarious margins, imbricated in 3 or 4 series, appressed. Receptacle flat, areolate, nearly naked. Corolla of the ray linear, twice the length of the involucre; of the disk tubular, slender, 5-toothed, about the length of the involucre. Branches of the style in the ray-flowers included in the tube of the corolla, narrowly linear, glabrous, stigmatose to the summit; in the disk filiform, elongated, barbellate throughout. Achenia of the ray short, triangular, turgid, villous; of the disk very short, villous, rudimentary. Pappus of the ray double; the exterior of few unequal short squamellate bristles; the interior of numerous rather rigid barbellate-scabrous capillary bristles, somewhat longer than the achenium: pappus of the disk of 2 awn-like bristles, nearly the length of the corolla, somewhat dilated and chaffy towards the base.—An annual herb, sparsely hispid with rigid spreading hairs, and glandular-scabrous, with numerous slender and elongated branches. Leaves linear, very narrow, short, entire, involute when dry; the uppermost setaceous. Heads solitary, terminating the branchlets. Flowers apparently yellow.

B. hirtella.

Texas, *Drummond!*—Stem about 2 feet high, somewhat corymbosely branched. Leaves rather rigid, numerous, the lower ones about an inch long, apiculate, sparsely hispid, like the stem, with long bristly hairs arising from a rigid somewhat dilated base, and minutely glandular-scabrous. Heads pedunculate, as large as in Chrysopsis graminifolia. Involucre at length spreading; the scales nearly glabrous, shining, remarkably membranaceous, 1-nerved. Ray-flowers about 12; the achenia slightly obovate, 3-sided, rather large. Pappus of the disk-flowers of 2 (very rarely one) bristles or awns resembling those of Ageratum conyzoides: in one of them the chaffy base is occasionally wanting.—We are not sure that the ray is yellow: if it prove otherwise, the plant would belong to De Candolle's division Astereæ, subdivision Heteropappeæ. The style is nearly the same with that of Vernoniacæ.—We dedicate this remarkable genus to the memory of John Bradbury, who in the year 1811 ascended the Missouri to the Mandan villages, and made an interesting collection of plants, &c., a portion of which were published by Pursh in the supplement to his Flora. "In 1817, he published in London a journal of his travels in America during the years 1809–11, in which is contained a great deal of interesting information on the botany of the Missouri country." (*Short, on Western Botany.*) This work we have never met with.—*Bradburya* of Rafinesque's *Florula Ludoviciana,* is founded on Robins' description of two species of Glycine, one of which appears to be Centrosema Virginiana, the other perhaps a Galactia.

54. HETEROTHECA. *Cass. bull. philom.* 1817, *& dict.* 21. *p.* 130; *DC.*

Calycium, *Ell.*—Diplocoma, *Don.*

Heads many-flowered; the ray-flowers ligulate, pistillate, in a single series; those of the disk tubular, perfect. Scales of the involucre linear, appressed, or with somewhat spreading points, imbricated in few series. Receptacle alveolate, fimbrillate. Corolla of the ray with a slender tube and an oblong or linear ligule; of the disk slender, somewhat dilated at the throat, 5-toothed. Appendages of the style in the disk-flowers lanceolate, acute, or rarely triangular and obtuse, hispid. Achenia of the ray (sometimes glabrous) oval, mostly triangular, destitute of pappus; of the disk obovate or cuneiform, compressed, hairy, with a double pappus; the exterior of very short squamellate or somewhat chaffy bristles; the interior of numerous capillary scabrous bristles mostly in a single series.—Perennial? (N. American and Mexican) strigose or hirsute herbs, paniculately branched. Leaves ovate or lanceolate, toothed or serrate, sometimes sprinkled with resinous dots; the lower petioled and often furnished with a dilated auriculate or stipuliform base. Heads in terminal (and often also in smaller axillary) corymbose panicles. Flowers yellow. Pappus usually reddish or brownish.

1. *H. scabra* (DC.): stem hispid and scabrous; the branchlets glandular; leaves strigose, veiny, dentate-serrate; the upper lanceolate, closely sessile or partly clasping; the lower oval, coarsely and unequally serrate-toothed, obtuse or subcordate at the base, petioled; the petioles dilated at the base into a roundish foliaceous toothed lamina resembling adnate stipules; heads in a loose spreading or divaricate corymbose panicle; involucre somewhat pubescent and glandular, shorter than the pappus; rays oblong-linear; achenia of the ray glabrous; of the disk silky-villous; inner pappus reddish-brown, in a single series; the exterior squamellate-setaceous, white.—*DC.! prodr.* 5. *p.* 317. H. Lamarckii, *Cass. in dict. sci. nat.* 21. *p.* 131 (fide descr.); *DC.! l. c.* (excl. char. & syn. except Inula subaxillaris, *Lam.*) Inula subaxillaris, *Lam. dict.* 3. *p.* 259, ex spec. in *herb. Desf.* (fide *Cass.*) I. scabra, *Pursh! fl.* 2. *p.* 531. I. punctata, *Muhl. cat.* Chrysopsis scabra, *Nutt. gen.* 2. *p.* 151; *Ell.! sk.* 2. *p.* 339.

α. Calycium: achenia of the ray oblong, crowned with a manifest cup-shaped epigynous disk.—Chrysopsis scabra, *Ell.! l. c., &c.* (Perhaps all the above synonymy belongs here.) Calycium, *Ell. l. c.*, in a note.

β. nuda: achenia of the ray broadly oval, the disk obscure.

Sandy soil and dry pastures, South Carolina! near the coast, to Western Louisiana! and Texas! Sept.–Oct.—All the specimens from South Carolina which we have examined present the "marginal cup" crowning the ray-achenia, as described by Elliott, to which his proposed generic name alludes; and this disk is uniformly nearly obsolete or very inconspicuous in our specimens from the Western States! The H. Lamarckii of De Candolle, as to the plant in his herbarium, we believe to be a state of the present species; but the character appears to be taken from the Chrysopsis divaricata of Nuttall and Elliott; who do not describe the ray-flowers as destitute of pappus, nor does the latter include that plant in his proposed genus Calycium, as De Candolle seems to have supposed. The oldest specific name, that of Inula subaxillaris, *Lam.*, is by no means appropriate, except to a particular state of the plant, or when the corymb has been injured, in which case it often produces short axillary flower-branches.

2. *H. grandiflora* (Nutt.): very villous, glandular and viscid above; leaves oval-oblong, obtuse, sparingly toothed; the upper sessile or nearly so with a tapering base; the lower tapering into long and slender petioles, which are somewhat dilated at the base; involucre glandular-viscid; achenia of the ray pubescent, of the disk silky-pubescent; exterior pappus setose, short, inconspicuous.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 315. Diplopappus scaber, *Hook.! fl. Bor.-Am.* 2. *p.* 22.

"N. W. Coast, *Menzies! in herb. Hook.* (probably California?) and on rocks St. Barbara, California, *Nuttall!*—Heads larger than in H. scabra, but smaller than in H. inuloides; distinguished from the former by the character assigned, and by the short and triangular obtuse appendages of the styles; from the latter by the obtuse, densely villous, slightly toothed leaves, distinct exterior pappus, &c. In our specimen of H. inuloides (Mexico, *Hartweg*), the disk-flowers present an unequal pappus of copious capillary bristles, forming 2 or more series, but with no distinct squamellate or setose exterior pappus; thus holding the same relation to Aplopappus, that the other species do to Chrysopsis.

Subdiv. 5. CHRYSOPSIDEÆ, *DC.*—Pappus of the ray and disk similar, double; the exterior short; the inner copious, capillary.

55. CHRYSOPSIS. *Nutt. gen.* 2. *p.* 150 (§ of Inula), excl. spec.; *Ell. sk.* 2. *p.* 333; *DC. prodr.* 5. *p.* 326.

Heads many-flowered; the ray-flowers ligulate, pistillate, in a single series; those of the disk tubular, perfect. Scales of the involucre linear, imbricate. Receptacle somewhat alveolate, flat. Corolla of the disk-flowers tubular, 5-toothed. Branches of the style mostly terminated by linear or linear-subulate hispid appendages, often longer than the flat stigmatic portion. Achenia obovate or linear-oblong, compressed, hairy. Pappus of the disk and ray similar, double; the exterior short, squamellate-setose or somewhat chaffy; the interior of numerous elongated and scabrous capillary bristles. Perennial, rarely annual or suffrutescent plants (all North American), mostly villous, silky, or woolly; with oblong or linear usually entire and sessile leaves. Heads terminating the branches, often corymbose, showy. Flowers yellow.

§ 1. *Perennial: leaves gramineous or linear, nerved: achenia oblong-linear, at length attenuate at each end, or fusiform: exterior pappus setiform or somewhat squamellate-subulate.*—PITYOPSIS, Nutt.

1. *C. graminifolia* (Nutt.): thickly clothed with long closely appressed silky hairs; stem corymbosely branched above, leafy; leaves lanceolate or linear, gramineous, shining, nervose, entire; the uppermost and those of the branchlets very short, appressed; heads corymbose, or somewhat paniculate; scales of the turbinate involucre linear and lanceolate-subulate, pubescent and more or less glandular; achenia linear or linear-oblong, silky-pubescent; exterior pappus nearly setiform.—*Ell. sk.* 2. *p.* 334; *DC.! prodr.* 5. *p.* 326. Inula graminifolia, *Michx.! fl.* 2. *p.* 122; *Pursh, fl.* 2. *p.* 532; *Nutt.*

gen. 2. *p.* 151. Erigeron nervosum, *Willd.! spec.* 3. *p.* 1953. E. glandulosum, *Poir.* ex *DC.* Diplopappus graminifolius, *Less. in Linnæa*, 5. *p.* 310. D. sericeus, *Hook. compan. to bot. mag.* 1. *p.* 97. Pityopsis (Sericophyllum) graminifolia & argentea, *Nutt. in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 318.

β. achenia rather shorter; stem less leafy towards the summit.—C. argentea, *Nutt. l. c.; Ell. l. c.; DC.! l. c.* Inula argentea, *Pers. syn.* 2. *p.* 452, ex *DC.* I. graminifolia β. tenuifolia, *Torr.! in ann. lyc. New York*, 2. *p.* 212.

Dry sandy soil, Delaware to Florida! Alabama! and Western Louisiana! July–Oct.—Stem 1–2 feet high, usually leafy throughout. Leaves with both surfaces similar and shining; the pubescence at length often partly deciduous; the leaves of the branches somewhat subulate. Heads variable in size. Pappus whitish or brownish.—This species varies considerably as to the size and breadth of the leaves; but C. argentea can scarcely be distinguished, even as a variety. In both forms the involucre is either manifestly or very slightly glandular, and sometimes a glandular pubescence takes the place of the silky hairs on the branchlets and peduncles.

2. *C. oligantha* (Chapman! mss.): stem simple, slender, glandular and naked above, bearing 2–4 heads; leaves lanceolate or spatulate-lanceolate, silky with closely appressed shining hairs, nervose, entire; heads on elongated naked peduncles; scales of the campanulate involucre subulate-lanceolate, glandular, somewhat pubescent; achenia linear, elongated, silky-villous; exterior pappus nearly setiform.

Damp pine barrens of Middle Florida, *Dr. Chapman!* April–May.—Stem 12–18 inches high, somewhat leafy and silky below the middle, but glandular and entirely naked or with a few minute bracts above. Leaves either elongated as in the preceding, or short and linear-spatulate, or even oblong and obtuse, on the same plant. Peduncles 2–4 inches long. Heads mostly larger than is usual in C. graminifolia—This is a vernal species, closely allied to the preceding, but perhaps sufficiently distinct. It cannot be the Inula argentea of Persoon, or of later authors: the achenium and pappus are wholly similar to the preceding.—We have seen Mexican specimens almost intermediate between this species and the preceding.

3. *C. pinifolia* (Ell.): nearly glabrous; stem rigid, branching; leaves crowded, narrowly linear, rigid, carinate-nerved; the uppermost setaceous; heads mostly solitary terminating the branchlets; inner scales of the involucre linear-lanceolate, somewhat membranaceous and lanate-ciliate at the apex; achenia linear, villous; exterior pappus somewhat chaffy or squamellate.—*Ell.! sk.* 2. *p.* 335; *DC.! prodr.* 5. *p.* 326. Erigeron retroflexum, *Poir. suppl.* 2. *p.* 464? Pityopsis pinifolia, *Nutt.! l. c.*

Sand-hills between the Flint and Chatahoochee Rivers, Georgia, *Elliott!* Sept.–Oct.—Stem 1–2 feet high. Lower leaves 4–6 inches long. Heads rather large. Exterior pappus very short, whitish; the interior reddish-brown.

4. *C. falcata* (Ell.): stem lanate-villous, often branched; leaves crowded, linear, mucronate, rigid, spreading or falcate, about 3-nerved, entire, hairy or at length nearly glabrous; heads (small) paniculate-corymbed; the pedicels slender; scales of the campanulate involucre villous-pubescent; achenia oblong-linear; exterior pappus setiform.—*Ell.! l. c. p.* 336 (note); *DC.! l. c.* Inula falcata, *Pursh, fl.* 2. *p.* 532. I. (Chrysopsis) Mariana, *β. Nutt.! l. c.* Pityopsis falcata, *Nutt.! in trans. Amer. phil. soc. l. c.*

Pine barrens, New Jersey! and Long Island, New York! Connecticut, *Dr. Robbins!* Nantucket, Massachusetts, *Mr. T. A. Green!* July–Sept.—Stems 6–10 inches high, stout, very leafy. Pappus cinnamon-colored.—A very distinct species.

§ 2. *Perennial: leaves oblong or lanceolate, somewhat veined: achenia obovate or oblong, compressed.*—EUCHRYSOPSIS.

* *Exterior pappus manifest, setose or squamellate-subulate.*

5. *C. Mariana* (Nutt.): villous with long and weak somewhat deciduous hairs; stem mostly simple, leafy; leaves membranaceous, oblong or elliptical, entire, or remotely mucronately serrulate, mucronulate, somewhat veiny; the uppermost closely sessile; the lower tapering to the base and somewhat petioled; corymb mostly simple; peduncles glandular; scales of the campanulate involucre linear, acute, somewhat glandular-viscid; achenia obovate, pubescent; exterior pappus setose-squamellate.—*Nutt.! l. c.; Ell.! sk.* 2. *p.* 335; *DC.! prodr.* 5. *p.* 327. Inula Mariana, *Linn. spec.* (*ed.* 2) 2. *p.* 1240; *Pursh, fl.* 2. *p.* 531. Aster Carolinianus pilosus, &c., *Mill. dict. t.* 57. Diplopappus Marianus, *Hook. compan. to bot. mag.* 1. *p.* 97; *Darlingt. fl. Cest. p.* 475.

Sandy and barren dry soil, New York? and New Jersey! to Florida! and Louisiana! common. Aug.-Oct.—Stem 1-3 feet high. Leaves villous with sparse very long and silky hairs, or sometimes nearly glabrous, mostly obtuse; the lower 3-5 inches long. Heads rather large. Pappus pale.

6. *C. trichophylla* (Nutt.): villous with very long and weak loose woolly hairs, glabrous towards the summit; stem simple or branched below, very leafy; leaves narrowly oblong or lanceolate, entire or obscurely serrulate, obtuse, somewhat mucronulate; the upper ones closely sessile, often nearly glabrous; the lower oblong-spatulate, veiny; corymb simple or compound, loose; the peduncles glabrous; scales of the hemispherical-campanulate involucre lanceolate-linear, acute or mucronate, glabrous or minutely glandular; the points often somewhat foliaceous and spreading; achenia oblong-obovate, obscurely ribbed, hairy or villous; exterior pappus nearly setiform.—*Nutt. gen.* 2. *p.* 150; *Ell. sk.* 2. *p.* 336; *DC.! prodr.* 5. *p.* 327.

β. hyssopifolia: radical leaves oblong-spatulate, in dense very woolly tufts; the cauline linear-spatulate or narrowly linear, sparingly pilose or glabrous; involucre glabrous.—C. hyssopifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 67. Diplopappus trichophylla? *Hook.! compan. to bot. mag.* 1. *p.* 97. (plant from Jacksonville.)

Dry soil, N. Carolina! to Florida! and Louisiana! *β.* Florida and Louisiana! Aug.-Oct.—Stem 1-3 feet high, sometimes simple and loosely corymbose at the summit, with few heads; often branched from the base, with a diffuse compound corymb. Heads about as large as in C. Mariana.—Well described as intermediate between the latter and C. gossypina; but distinguished from both by the much narrower leaves, glabrous branches and peduncles, more subulate appendages of the style, &c. The foliage varies through a variety of forms into var. *β.*; in which they are sometimes no more than a line wide, but variable in form, and either glabrous or hairy; so that we cannot define it as a separate species.

7. *C. gossypina* (Nutt.): very densely lanuginous-tomentose throughout; leaves oblong or elliptical, obtuse, entire; the upper ones closely sessile; the lower spatulate; heads corymbose or somewhat panicled; scales of the involucre lanceolate, acute, at first woolly; achenia obovate, hairy, somewhat ribbed; exterior pappus almost setiform.—*Nutt.! l. c.; Ell.! sk.* 2. *p.* 337; *DC.! prodr.* 5. *p.* 327. Inula gossypina, *Michx.! fl.* 2. *p.* 122; *Pursh, l. c.* I. glandulosa, *Lam. dict.* 3. *p.* 259, excl. syn., fide *DC.* Erigeron pilosum, *Walt.! Car. p.* 206.

β. dentata: lower leaves elongated, coarsely sinuate-toothed towards the summit.—C. dentata, *Ell.! l. c.*

Pine barrens &c., Virginia and N. Carolina! to Florida! *β.* Louisville, Georgia, *Elliott!* Aug.-Oct.—Stem 1-2 feet high. Lower leaves about 2 inches long. The whole plant remarkable for its thick and soft woolly covering. Heads rather larger than in C. Mariana. Pappus brownish. Achenia marked with 2–5 elevated ribs.

8. *C. scabrella:* pulverulent-scabrous throughout; stem stout, corymbosely branched above, leafy; leaves oblong-lanceolate, mucronulate, entire, equally somewhat glandular-scabrous on both sides, sessile; the lower ones narrowed at the base; heads numerous, in a compound corymb; peduncles and lanceolate obtuse scales of the involucre puberulent-glandular; achenia oblong-obovate, silky-villous; exterior pappus nearly setiform.

In pine woods, Florida, *Dr. Leavenworth!* Sept.–Oct.—Stem 2 feet high. Leaves about as large as in C. Mariana, but narrower, rather firm, totally destitute, as is the whole plant, of silky or woolly hairs. Corymb fastigiate, rather dense. Heads a little smaller than in C. Mariana. Pappus pale.

9. *C. villosa* (Nutt.): stem villous-pubescent and sparsely hirsute, erect, simple or corymbose, very leafy; leaves canescently strigose on both sides, mucronate, entire or rarely with a few sharp scattered teeth, hispidly ciliate towards the base, sessile; the upper ones linear-oblong or lanceolate, the lower oblong-spatulate, tapering at the base; heads solitary or somewhat corymbose at the extremity of the branches, on short peduncles; scales of the broadly campanulate involucre linear-subulate, strigosely pubescent; achenia obovate, villous; exterior pappus setose-squamellate.—*Nutt.! l. c.; DC. l. c.* Amellus villosus, *Pursh, fl.* 2. *p.* 564. Diplopappus villosus, *Hook.! fl. Bor.-Am.* 2. *p.* 22, *& compan. to bot. mag.* 1. *p.* 97; *Hook. & Arn.! bot. Beechey, p.* 146.

Prairies of Illinois! and the plains of the Missouri! Saskatchawan! &c. (also in Alabama, *Mr. Buckley!*) extending beyond the Rocky Mountains to Oregon, *Douglas!* California, *Capt. Beechey!* in *herb. Hook.* July–Sept.—Stems 1–2 feet high. Leaves an inch or more in length, 1-nerved, slightly veiny; the rigid pubescence closely appressed. Heads large. Rays about 25. Pappus tawny or nearly white. Appendages of the style subulate-linear, rather obtuse.

10. *C. hispida* (Hook.): hispid throughout with uniform spreading hairs; branches somewhat corymbose; leaves oblong-spatulate, narrowed at the base and somewhat petioled; the radical on long peduncles; scales of the involucre narrowly linear, acute; achenia obovate-oblong, hairy; exterior pappus squamellate.—*Hook.! fl. Bor.-Am.* 2. *p.* 22 (under Diplopappus); *DC. prodr.* 7. *p.* 279; *Nutt.! in trans. Amer. phil. soc. l. c. p.* 316.

On the Saskatchawan, *Richardson!* Rocky Mountains, *Nuttall!*—A smaller plant than C. villosa, (6–8 inches high), which it considerably resembles. Pappus tawny; the exterior rigid, white.—According to Nuttall, "there are numerous aromatic resinous glands spread over most part of the plant."

* * *Exterior pappus setose, indistinct: achenia oblong, densely silky-villous: plants canescent or silky-villous: leaves entire.* (Aplopappus § ? Leucopsis, *DC.*, at least in part.)

10. *C. mollis* (Nutt.): silky-canescent throughout; leaves spatulate-oblong, mostly obtuse; the upper sessile, the lower tapering to the base, somewhat petioled; heads few, corymbose; scales of the villous-canescent involucre linear-lanceolate.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Plains of the Platte, with the following; "which it much resembles, but the leaves are more oblong, not in the least scabrous, nor anywhere ciliate; the stem also softly villous." *Nuttall.*—Except in the silky appressed pubescence, it closely resembles C. hispida.

11. *C. foliosa* (Nutt.): uniformly canescent with a soft silky-villous pubescence, and at the same time scabrous; stems very leafy to the summit; leaves oblong or elliptical, obtuse, mucronulate, not tapering to the base, closely sessile, or slightly clasping, with very scabrous margins; the lower sometimes fringed with bristles towards the base; heads fastigiate-corymbose, crowded, nearly sessile; involucre campanulate, canescent, rather shorter than the disk; the linear-subulate scales closely imbricated.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Plains of the Platte, in the Rocky Mountains, *Nuttall!* Aug.—Stems many from the same root, a foot high, canescent with villous soft spreading hairs, but beneath this somewhat deciduous pubescence very scabrous. Leaves about an inch long, and half an inch wide, appressed silky, and also rough beneath this covering. Heads smaller than in C. villosa, with shorter rays. Pappus brownish.—Allied to the following.

12. *C. canescens:* silky-canescent throughout, suffrutescent at the base, much branched, rigid; stems and fastigiate branches very leafy; leaves linear-oblanceolate or spatulate-oblong, mucronate-acuminate, tapering to the base, sessile, fringed below the middle with long and scattered rigid bristles; heads mostly solitary terminating the crowded branchlets; scales of the campanulate involucre subulate-linear, closely imbricated, canescent.—Aplopappus? (Leucopsis) canescens, *DC.! prodr.* 5. *p.* 349; not Chrysopsis canescens, *DC. l. c. p.* 328, which is Erigeron (Pseuderigeron) filifolium.

Texas, *Berlandier! Drummond! Dr. Riddell!* Aug.–Sept.—Variable in the size and form of the leaves; those of the branchlets much smaller: the branches occasionally bear a few bristles like those so conspicuous on the margins of the leaves. Heads, involucre, and pappus (often ferruginous) nearly as in C. foliosa, *Nutt.* Rays rather numerous and short.

* * * *Exterior pappus chaffy but very minute; the inner nearly in a single series: heads subtended by foliaceous bracts similar to the upper leaves.* (Phyllotheca, *Nutt.*)

13. *C.? sessiliflora* (Nutt.): hirsute throughout with spreading viscid hairs; stem branched; leaves lanceolate or linear-oblong, acute, sessile, entire; heads solitary, shorter than the linear-lanceolate involucrate bracts; scales of the involucre linear-subulate, slender, rather longer than the disk.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 317.

St. Barbara, California, *Nuttall!* April.—♃ Plant with "a heavy aromatic odor and bitter taste," clothed with slender viscid hairs, with shorter glandular hairs intermixed. Leaves an inch long. Rays about 30, narrow, elongated "with rudiments of stamina, or filaments. Appendages of the style oblong, obtuse, shorter than the stigmatic portion. Ovaries villous.

§ 3. *Annual: leaves oblong or lanceolate, somewhat veined; the lower often toothed: achenia obovate, compressed: exterior pappus of conspicuous rigid chaffy scales; the inner of* 25–30 *capillary bristles in a single series:* ~~*receptacle convex.*~~—ACHYRÆA. (Subgen. Phyllopappus, *Nutt.*; not of *Walp.*)

14. *C. pilosa* (Nutt.): villous with very soft and loose partly deciduous hairs, and minutely viscid-puberulent; stem simple or loosely branched; leaves lanceolate; the upper closely sessile, acute or mucronulate, entire; the lowermost tapering to the base, often toothed; heads nearly solitary terminating the branches; scales of the hemispherical involucre narrowly linear, very acute, villous and viscid, almost equal, as long as the disk, achenia pubescent, obscurely impressed-striate.—*Nutt.! in jour. acad. Philad.* 7. *p.* 66, *& trans. Amer. phil. soc. l. c.*

Pine woods and open barrens, Arkansas, *Nuttall! Dr. Pitcher!* Louisiana, *Dr. Leavenworth! Dr. Hale! Dr. Carpenter!* Texas, *Drummond!* July–Sept.—Stem 1–2 feet high. Heads smaller than in C. villosa, with numerous elongated rays. Appendages of the style elongated-subulate, more than twice the length of the stigmatic portion. Inner pappus brownish; the exterior whitish, the scales linear-oblong, about one-third the length of the achenium, slightly denticulate, firm.—The lower leaves are sometimes laciniate-toothed or incised.

Subtribe BACCHARIDEÆ, *Less.*—Heads discoid, never radiate, diœcious or monœcious; the fertile flowers mostly filiform and truncate, and when monœcious in several series, with the sterile flowers in the centre. Receptacle not chaffy. Anthers not caudate at the base.—Leaves alternate.

56. CONYZA. *Linn.* (excl. spec.); *Less. syn. p.* 203.

Heads many-flowered, monœcious; the exterior pistillate and fertile, in many series, with a filiform truncate or 2–3-toothed corolla; a few of the central flowers staminate, sterile, but often styliferous or even fertile, with a tubular 5-toothed corolla. Scales of the involucre in several series. Receptacle flat or convex, punctate or fimbrillate. Achenia compressed, attenuate at the base, usually glabrous. Pappus a single series of capillary scarcely scabrous bristles.—Chiefly tropical herbs, with branching stems, and variously incised leaves. Heads peduncled, corymbose or paniculate. Flowers yellow.

1. *C. sinuata* (Ell.): annual? hairy, somewhat scabrous; lower leaves sinuate; the lobes oval, acute; the upper linear, entire; heads paniculate; scales of the involucre linear-subulate; flowers white, all fertile; achenia oblong, angled, hairy. *Ell. sk.* 2. *p.* 378.

Around Charleston, S. Carolina, very common. April–July.—The plant scarcely appears to be a native, and has the habit and appearance of an Erigeron. *Elliott.*—This plant is entirely unknown to us and is probably not indigenous. It appears to belong to Conyza sect. Dimorphanthes, the American species of which frequently have the central flowers perfect and fertile.

C. Chilensis, Spreng. According to De Candolle, a specimen of this plant in Hænke's collection is said to have been obtained at Mulgrave Sound on the Pacific coast; but there is doubtless some mistake as to the ascribed habitat of this and many other of Hænke's plants.

57. BACCHARIS. *Linn.; Michx. fl.* 2. *p.* 125; *DC. prodr.* 5. *p.* 398.

Heads many-flowered, diœcious; the flowers all tubular and similar. Involucre somewhat hemispherical or oblong; the scales imbricated in several series. Receptacle naked, or rarely somewhat chaffy. Corolla in the sterile flowers somewhat dilated and 5-cleft at the summit; in the fertile filiform, somewhat truncate. Anthers exserted in the sterile flowers; entirely absent in the fertile. Style in fertile flowers exserted; the branches glabrous; in the sterile tipped with an ovate hairy appendage, often more or less abortive. Achenia ribbed or grooved. Pappus capillary; of the sterile plant in a single series, often tortuous or somewhat plumose-penicillate, about the length of the involucre; of the fertile plant in one or several series, not thickened or penicillate at the apex, usually much longer than the involucre.—Shrubs, very rarely herbs (nearly all American), commonly glabrous and resinous, or viscous. Leaves mostly alternate, entire or toothed, often decurrent on the branches, forming either a foliaceous wing or narrow margins. Flowers mostly white.

* *Natives of the United States.*

1. *B. angustifolia* (Michx.): glabrous, much branched; the branchlets angled; leaves narrowly linear, sessile, entire, rather acute; heads about 20-flowered, axillary, pedunculate, and somewhat clustered at the summit of the branches, forming a loose panicle; scales of the involucre ovate-lanceolate, acute.—*Michx.! fl.* 2. *p.* 125; *Pursh, fl.* 2. *p.* 523; *Ell.! sk.* 2. *p.* 318; *DC.! prodr.* 5. *p.* 423.

Sea-coast, S. Carolina! to Florida! and Louisiana! Sept.–Oct.—Shrub 6–10 feet high. Heads small.

2. *B. halimifolia* (Linn.): arborescent, glabrous, somewhat scurfy-glaucescent; the branches angled; leaves obovate, coarsely angulate-toothed above, cuneate at the base and somewhat attenuate into a petiole; the uppermost lanceolate, entire; heads of the sterile plant subglobose, pedicellate, solitary or aggregated; the fertile loosely somewhat panicled ovate-oblong; scales of the sterile involucre ovate; the inner ones elongated in the fertile. *DC.*—*Linn.! spec.* 2. *p.* 860; *Michx.! fl.* 2. *p.* 125; *Pursh, fl.* 2. *p.* 523; *Ell.! sk.* 2. *p.* 319; *Duham. arb.* (*ed.* 2) 1. *t.* 60; *DC.! prodr.* 5. *p.* 412. Senecio Virginianus arborescens, *Herm. parad. Bat. t.* 225. Elichryso affinis, &c., *Pluk. alm. t.* 27, *f.* 2.

Sandy beach of Connecticut! New York! and New Jersey, and throughout the low country of the Southern States! "growing indiscriminately in fresh or brackish soils," *Ell.* Sept.–Oct.—Shrub 6–12 feet high. Pappus of the fertile flowers very long and slender.

3. *B. glomeruliflora* (Pers.): shrubby, very glabrous; the branches angled; leaves smooth, cuneate-obovate, attenuate into a short petiole, obtuse, coarsely toothed; the uppermost obovate-oblong, entire; heads sessile and crowded in the axils of the leaves; the sterile involucre campanulate, with the scales oblong and obtuse. *DC.*—*Pers. syn.* 2. *p.* 423; *Pursh, l. c.* B. sessiliflora, *Michx.!* 2. *p.* 125; *Ell. sk.* 2. *p.* 320; not of *Vahl.*

Damp pine barrens along the sea-coast, (but not in brackish soils, *Ell.*) Virginia to Florida! and Louisiana! Sept.–Nov.—Shrub 3–5 feet high. Leaves pale green. Pappus of the fertile flowers very long, as in the preceding.—De Candolle, from whom we have taken the characters of this species and B. halimifolia, places the two at considerable distance from each other; and authors appear to have no doubt of their distinctness: but, if indeed we are truly acquainted with the present species, we cannot distinguish them.

4. *B. salicina:* "shrubby, smooth; branches angular; leaves mostly oblong-lanceolate, subdenticulate; the uppermost nearly linear, entire, viscid; heads sessile, clustered; involucre ovate, as well as the smooth scales." *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 337, under the name of B. salicifolia, which is pre-occupied by Persoon. B. aff. rupicola, *Torr.! in ann. lyc. New York*, 2. *p.* 211.

Banks of the Arkansas.—Nearly allied to B. glomeruliflora. More or less resinously punctate. Leaves very obscurely 3-nerved, attenuated into a petiole. *Nuttall.*—Dr. James collected this plant on the Canadian, but his specimens are not sufficient to allow of our offering any opinion respecting the species.

* * *Natives of California.*

5. *B. consanguinea* (DC.): shrubby, much branched, glabrous, viscous when young; the branchlets decurrent-angled; leaves sessile, obovate-cuneiform, obtuse, with 2–4 rigid acute teeth on each side; heads sessile at the summit of the branches and branchlets, solitary, or mostly aggregated in glomerules of 2–4; scales of the involucre in the fertile heads oblong-linear, obtuse, with a membranaceous somewhat fimbriate margin; the innermost rather acute. *DC. prodr.* 5. *p.* 408; *Hook. & Arn. bot. Beechey, suppl. p.* 352. B. glomeruliflora, *Hook. & Arn. l. c. p.* 147, excl. var. β. (which these authors now refer to B. pilularis.) no. 62 Dc. calif. [illegible] Barclay !
California, *Menzies, Douglas,* &c.—Leaves 6 lines long, about 3 broad, slightly scaly above, *DC.*—Hooker & Arnott still doubt whether this species be really distinct from B. glomeruliflora, or from B. pilularis. [illegible]

6. *B. pilularis* (DC.): somewhat shrubby, much branched, glabrous and viscous; the branches angled; leaves sessile, obovate-cuneiform, obtuse, entire, or often slightly toothed, 1-nerved, coriaceous; heads globose, solitary at the summit of the branches on the axillary branchlets, bracteate with minute leaves; scales of the involucre in the sterile plant oblong, rather acute, the margin membranaceous and somewhat fimbrillate at the apex. *DC. prodr.* 5. *p.* 407; *Nutt. in trans. Amer. phil. soc. l. c.* [illegible] 1771.
California, *Douglas, Nuttall!*—Leaves 4 lines long, and 2–3 broad; the uppermost shorter than the heads. Heads about 2 lines in diameter. Fertile plant unknown. *DC.*—"In my specimens of the fertile plant, the leaves are often strongly denticulate, three-fourths of an inch long, by half an inch in width: the capituli solitary or by threes. . . . Achenia smooth with 10 grooves, the pappus of moderate length. A shrub 3 or 4 feet high. It appears to be subject to the attack of some insect, which causes excrescences on the branches; and hence, I suppose, arises the specific name." *Nutt. l. c.*

7. *B. Douglasii* (DC.): herbaceous, erect, very glabrous, viscid; stem simple, angled above; leaves on short petioles, lanceolate, acute, entire, 3-nerved, both sides punctate; corymb in the sterile plant compound, somewhat naked, fastigiate, bearing numerous heads; involucre campanulate; the scales lanceolate, rather acute, with membranaceous ciliate margins. (Leaves 2 inches long, 5–6 lines wide, the upper narrower; pappus of the sterile flowers whitish, as long as the involucre.) *DC. prodr.* 5. *p.* 400. B. glutinosa, *Hook. & Arn. bot. Beechey, p.* 147, & *suppl. p.* 352, under B. Douglasii, and by mistake printed *viscosa.* [B. Pingræa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 337. Molina linearis, *Less. in Linnæa,* 6. *p.* 139 & 505.] [illegible] 1776.
California, *Chamisso, Capt. Beechey, Douglas, Nuttall!*—This plant, which Lessing and Nuttall take for B. Pingræa, Hooker and Arnott remark that they are still unable to distinguish from the Chilian B. glutinosa.

8. *B. viminea* (DC.): shrubby, glabrous; branches terete, the branchlets striate-nerved; leaves on short petioles, oblong-lanceolate, acute at each end, slightly 3-nerved at the base, entire, or minutely denticulate at the apex; corymbs somewhat racemose, crowded, terminating the branchlets; heads of the sterile plant pedicellate; the scales of the involucre oval-lanceolate, acute, membranaceous, ciliate. *DC. prodr.* 5. *p.* 400; *Hook. & Arn. l. c.*
California, *Douglas,*—Fertile plant unknown. Leaves 12–14 lines long, those of the branchlets short and scale-like. Pappus of the sterile flowers scarcely longer than the involucre. *DC.*

Subtribe 3. TARCHONANTHEÆ, *Less.*—Heads discoid, never radiate, diœcious or heterogamous; the fertile flowers tubular-filiform, mostly truncate, when heterogamous with the perfect or staminate flowers in the centre. Receptacle sometimes chaffy. Anthers caudate at the base.—Leaves alternate.

CONSPECTUS OF THE GENERA.

* *Pappus of the sterile and fertile flowers similar, capillary.*

58. PLUCHEA. Involucre persistent. Heads in compound corymbs.
59. PTEROCAULON. Involucre deciduous. Heads spicate. Leaves decurrent.

* * *Pappus of the sterile and fertile flowers none. Receptacle flat or conical.*

+ Flowers all fertile.

60. CALYMMANDRA. Achenia of the perfect flowers only enclosed by the chaff.

+ \+ Staminate flowers few, sterile.

61. FILAGINOPSIS. Fertile flowers numerous, in the axils of narrow equal chaff.
62. DIAPERIA. Fertile flowers 8–12, in the axils of broad unequal concave chaff.
53. MICROPUS. Fertile flowers 5–7, enclosed in rigid gibbous scales.
64. PSILOCARPHUS. Fertile flowers numerous, enclosed in membranous chaff.

* * * *Pappus of the sterile flowers of few bristles. Receptacle columnar.*

65. STYLOCLINE. Achenia numerous, enclosed in the saccate keel of the broad chaff.

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58. PLUCHEA. *Cass. bull. philom.* 1817, *p.* 31; *DC. prodr.* 5. *p.* 449.

Stylimnus & Gynema, *Raf.* (1819.)—Leptogyne, *Ell.* (1824.)

Heads many-flowered; the central flowers mostly perfect, but sterile; the others filiform, pistillate, in many series. Involucre imbricated. Receptacle flat, mostly naked. Corolla of the fertile flowers truncate, or minutely 2–3-toothed; of the sterile dilated and 5-cleft at the summit. Anthers bicaudate. Style in the central flowers entire or minutely 2-toothed. Achenia somewhat cylindrical, angled or grooved. Pappus capillary, in a single series, slightly scabrous.—Herbs, or rarely suffrutescent plants (mostly subtropical), glandular, emitting a strong and somewhat disagreeable odor. Leaves oval or oblong, serrate. Heads in compound corymbs. Flowers mostly purplish.

1. *P. bifrons* (DC.): pubescent and slightly viscid; leaves oval or lanceolate-oblong, somewhat cordate and clasping at the base, mucronately serrulate, reticulate-veined, sprinkled with resinous globules; heads in compact fastigiate corymbs.—*DC.! prodr.* 5. *p.* 451. Conyza bifrons, *Linn. spec.* 2. *p.* 862 (excl. var. radiata); *Pursh, fl.* 2. *p.* 524; *Ell. sk.* 2. *p.* 322; *Hook. compan. to bot. mag.* 1. *p.* 96. C. amplexicaulis, *Michx.! fl.* 2. *p.* 126. *β.* uliginosa, *Pers.*, ex *DC.* Baccharis viscosa, *Walt.! car. p.* 202.

Wet places in the low country, from South Carolina! to Florida! and

[illegible]land.

Louisiana! July.–Sept.—♃ Stem 2–3 feet high. Leaves 2–3 inches long, rather acute. Flowers dull purple.

2. *P. fœtida* (DC.): stem minutely pubescent; leaves (large) oval-lanceolate, very acute or acuminate at each end, distinctly petioled, membranaceous, almost glabrous, conspicuously feather-veined, serrate; corymbs compound, paniculate; scales of the involucre glabrous, dotted with minute glands.—*DC.! prodr.* 5. *p.* 452. (excl. syn. *Pursh* & *Cass.?*) P. petiolata, *Cass. in dict. sci. nat.* 42. *p.* 2? Baccharis fœtida, *Linn. spec.* 2. *p.* 861, at least as to syn. *Dill. Elth. t.* 89, *f.* 105. Conyza camphorata, *Pursh, fl.* 2. *p.* 523; *Nutt. gen.* 2. *p.* 145, not of *Ell.?* nor Erigeron camphoratum, *Linn.* Gynema dentata & viscida, *Raf.! ann. nat. p.* 159 & *in herb. DC.*

Along streams, &c. Pennsylvania? to Alabama! and throughout the Western States! Aug.–Oct.—♃ Stem strongly grooved or angled, 2–4 feet high: the plant exhaling a more powerful odor than the following species. Leaves 5–8 inches long, and 1–3 broad, pubescent beneath, especially on the veins, and copiously sprinkled with minute resinous globules, very veiny. Heads numerous: the involucre at first rather longer than the disk.—We are somewhat uncertain as to the plant of Clayton on which the Baccharis fœtida of Linnæus was partly founded; but the figure of Dillenius here cited doubtless was intended for this species. The Erigeron camphoratum, *Linn. hort. Ups.* &c. is pretty clearly the following. We therefore retain the synonymy of De Candolle, but reduce two of his species to one.

3. *P. camphorata* (DC.): minutely viscid-pubescent and glandular; leaves lanceolate-ovate or oblong-ovate, serrile or slightly petioled, pale and minutely pubescent and sprinkled with resinous globules both sides, slightly feather-veined, repandly serrate; corymbs fastigiate; scales of the involucre pubescent and viscid, ciliate.—P. camphorata & P. Marilandica, *DC.! l. c.* P. Marilandica, *Cass. l. c.?* Erigeron camphoratum, *Linn. spec.* 2. *p.* 864; *Willd.! spec.* 3. *p.* 1960. Conyza Marilandica, (*Dill. Elth. t.* 88, *f.* 104?) *Michx.! fl.* 2. *p.* 126; *Pursh! l. c.*; *Nutt. l. c.*; *Ell. sk.* 2. *p.* 320. C. camphorata, (*Ell. l. c.?*) *Bigel. fl. Bost. ed.* 2. *p.* 299, not of *Pursh*, &c. Baccharis fœtida, *Walt.?* Stylimnus maritimus, *Raf.! in herb. DC.*

β. angustifolia: leaves lanceolate, obscurely serrulate or entire.—Conyza angustifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 109.

Salt marshes, Massachusetts! to Florida! and Louisiana! Aug.–Oct.—① Stem 10–30 inches high. Leaves slightly succulent, 2–3 inches long. Heads fewer and larger than in the preceding; the purplish involucre at length shorter than the disk. Flowers light purple.

4. *P. purpurascens* (DC.): herbaceous, somewhat viscidly puberulent; leaves ovate-lanceolate, rather acute, unequally serrate, tapering into a petiole, minutely puberulent and glandular, somewhat veiny; heads subglobose, pedicellate, in loose corymbs; scales of the involucre pubescent-tomentose and viscid; the exterior ovate, the inner oval-lanceolate, somewhat spreading. *DC. prodr.* 5. *p.* 452.—Conyza purpurascens, *Swartz, prodr. Ind. Occ. p.* 112?

Key West, *Mr. Blodgett!*—Apparently a rather small annual herb; with much the habit and appearance of C. camphorata, the leaves about the same size, but narrower; the cauline ones tapering into distinct petioles. As we have seen specimens of the same species from St. Domingo, we have little doubt that it is De Candolle's P. purpurascens, and most probably his P. glabrata also.

Conyza Caroliniensis of Jacquin is referred by De Candolle to Pluchea (Conyza, *Linn.*) odorata, a shrubby West Indian and Mexican, but certainly not a Carolinian species.

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59. PTEROCAULON. *Ell. sk.* 2. *p.* 333 (1824); *DC. prodr.* 5. *p.* 453.

Heads many-flowered; the fertile flowers filiform, pistillate, in several series; the perfect flowers in the centre (or intermixed with the others, *Ell.*), mostly sterile. Scales of the oblong involucre imbricated in several series, appressed or with slightly squarrose points, caducous. Receptacle minutely fimbrillate or hirsute. Corolla of the fertile flowers 3-toothed; the sterile 5-cleft at the summit. Anthers bicaudate, somewhat exserted. Achenia angled, pubescent with appressed hairs. Pappus of numerous capillary scabrous equal bristles, longer than the involucre.—Perennial herbs, or slightly shrubby plants (chiefly natives of tropical America), with a somewhat tuberous rhizoma. Leaves alternate, lanceolate, entire or denticulate, very densely tomentose beneath, the margins decurrent along the stem into continuous foliaceous wings. Heads sessile, densely crowded in simple or compound spikes. Flowers usually white.

1. *P. pycnostachyum* (Ell.): stem herbaceous, simple; leaves lanceolate, undulate-denticulate, glabrous above; heads in a dense continuous spike; scales of the involucre silky-tomentose, squarrose at the apex.—*Ell. l. c.; DC.! l. c.* Conyza pycnostachya, *Michx.! fl.* 2. *p.* 126; *Pursh! fl.* 2. *p.* 524. Chlænolobus pycnostachyos, *Cass. in dict. sci. nat.* 49. *p.* 348 (1827). Pluchea pycnostachya, *Less.* Gnaphalium undulatum, *Walt.! Car. p.* 203.
Dry sandy soil, S. Carolina! to Florida! May–Aug.—*Black Root.* (The root is much used in some parts of the country as an alterative, and as a cleanser of old ulcers. *Elliott.*)

60. CALYMMANDRA.

Heads subglobose, subsessile, collected in small axillary clusters, many-flowered, heterogamous; the flowers all fertile; the pistillate in many series, in the axils of narrow and plane linear or somewhat spatulate scarious (villous-lanate) chaff of the receptacle, with a filiform truncate corolla; the perfect 5 in a single central series, each enclosed in an oval convolute woolly chaff; the short and somewhat inflated minutely 4-toothed corolla more or less exserted. Scales of the involucre few, similar to and passing into the chaff. Receptacle conical, punctate. Anthers with very short tails. Branches of the style short; in the perfect flowers oblong, flat; in the pistillate filiform. Achenia oval-oblong, nearly terete, very smooth, destitute of pappus, those of the perfect flowers similar, but enclosed by the subtending chaff.—A small annual herb, branched from the base, clothed with a very white and silvery appressed wool; the branches slender, somewhat simple, erect, bearing small bracteate or irregularly involucrate clusters of few heads, closely sessile in the axils of linear-oblanceolate or narrowly spatulate entire leaves; the heads themselves (about a line long) on short pedicels concealed by the wool.

C. candida.

Texas, *Drummond!*—Plant 5–10 inches high. Leaves alternate, approximate, half an inch or more in length, very much longer than the clusters in their axils. Chaff falling away when the achenia ripen, all nearly equal in length, scarious, glabrous towards the base, that of the perfect flowers woolly throughout, somewhat herbaceous, obtuse, shorter than the flowers, but investing the achenia, just as those of Micropus are enclosed by the scales of the involucre. In the latter, the exterior and pistillate flowers are thus invested: in this remarkable genus, on the contrary, the central staminate (and fertile) flowers are enclosed, to which circumstance the generic name alludes.

61. FILAGINOPSIS.

Heads subglobose-ovoid, collected in dense umbelliform clusters, many-flowered; the fertile flowers pistillate, numerous, and in many series in the axils of the linear-oblong and obtuse (woolly-tipped) flat and scabrous equal chaff of the receptacle, with a filiform truncate corolla; the 2–5 central staminate, with a tubular-infundibuliform 4-toothed corolla, sessile and with no vestige of an ovary, subtended by as many of the chaffy scales of the receptacle, and nearly equalling them in length. Involucre of few scales entirely similar to the chaff of the receptacle, and only distinguishable by having no flowers in their axils: involucrate bracts mostly 5, in a single series, obovate-spatulate, herbaceous, with scarious margins, very woolly. Receptacle flat or somewhat convex, papillose-punctate. Style in the staminate flowers undivided; in the fertile with short filiform branches. Achenia oval, smooth and glabrous, slightly obcompressed (that is parallel with the chaff), entirely destitute of pappus.—Annual woolly herbs, with the aspect of Filago (natives of Mexico and Texas), much branched from the base, diffuse. Leaves oblong-spatulate, entire, sessile. Heads in involucrate (simple or proliferous) woolly glomerules, terminating the branches.

This genus differs from Evax in the broad and flat receptacle, obtuse chaff, &c.; from the Diaperia of Nuttall in the roundish very many-flowered heads, the narrow chaff numerous in each series, the sessile sterile flowers, &c.

1. *F. multicaulis:* glomerules often proliferous; chaff of the sterile flowers linear-spatulate, somewhat herbaceous and woolly throughout, slightly involving the entirely glabrous corolla.—Evax multicaulis, *DC.! prodr.* 5. *p.* 459. E. verna, *Raf.! herb.*

Texas, *Berlandier! Drummond! Dr. Leavenworth!* (the former also obtained it in Mexico.)—Plant 3–6 inches high, with rather slender diffuse stems and branches, clothed with long loose wool. Leaves one-fourth to half an inch long; the involucrate ones unequal and often shorter than the irregular clusters. Heads ovoid; the chaff all but the inner series glabrous except at the summit, where the long wool is densely matted and coherent, while the base separates from the receptacle when the achenia are mature.

2. *F. Drummondii:* glomerules seldom proliferous: chaff of the sterile flowers entirely similar to that of the fertile, or wanting; the corolla (sterile), like the chaff, clothed with long woolly hairs at the summit.

Texas, *Drummond!*—Plant 4–8 inches high, more loosely branched than the preceding, which it exceedingly resembles. Heads fewer in a cluster and rather larger, very many-flowered, hemispherical-obovoid; the oblong-linear chaff all similar and of the same length, clothed towards the tips with rather shorter wool, so that they separate readily when they fall away; the 4 or 5 sterile corollas naked, connected by the crisped woolly hairs which grow on the dilated limb.

62. DIAPERIA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 337.

Heads fusiform-oblong, disposed in sessile glomerules of 4–5 together, which are collected in large capitate and bracteate compound clusters terminating the stem or simple and mostly proliferous branches; the fertile flowers 8–12, pistillate, in the axils of the chaff of the receptacle, with a much attenuated filiform truncate corolla; the 2–3 central staminate, with a tubular-infundibuliform minutely 4-toothed corolla, destitute of ovaries, each supported by a filiform stipe and enclosed in a chaff of the receptacle. Scales of the involucre and the chaff of the small convex receptacle scarious, oval, broad and large for the size of the head, closely and somewhat distichously imbricated and wrapped around each other, the inner successively longer; the 2–3 innermost chartaceous, attenuate at the base, woolly towards the apex, each convolute and separately enclosing a sterile flower. Style in the sterile flowers undivided; in the fertile with 2 filiform branches. Achenia obovoid-oblong, obcompressed, glabrous, destitute of pappus.—A small annual erect woolly herb, with spatulate-oblong or linear-spatulate numerous sessile entire leaves; the stems simple or often branched from the base, terminated by the large irregularly involucrate compound head; from which arise 1 to 5 or 6 simple branches, terminated by simple but usually smaller compound heads, in the manner of the *Herba impia;* and these rarely again proliferous. Proper heads and primary clusters more or less bracteate.

D. prolifera (Nutt.! l. c.)—Evax prolifera, *Nutt.! in DC. prodr.* 5. *p.* 459.

Banks of Red River, Arkansas, *Nuttall! Dr. Leavenworth!* June–Aug.—Stems stout, rigid, 2–5 inches high, terminated by a capitate cluster one-half to three-fourths of an inch in diameter, including a large number of small heads: some of the branches when numerous often arising below this compound head. Scales of the involucre few, entirely similar to the chaff, and passing into the latter, but shorter, and woolly externally: the chaff of the fertile flowers glabrous or slightly tomentose-ciliate: that of the sterile longest and more rigid, much longer than the slender corolla it encloses; the filiform stipe of the latter fully half its own length.

63. MICROPUS. *Linn.; Gærtn. fr. t.* 164; *Schkuhr, handb. t.* 267.

Heads collected in axillary sessile clusters, several-flowered; the fertile flowers 5–7, in a single series, pistillate, with a filiform corolla, enclosed in the inner scales of the involucre; the 3–7 central staminate, with an infundibuliform 5-toothed corolla, naked, destitute of ovaries. Receptacle small and flat. Involucre in 2 series, each of 5–7 scales; the exterior scarious, flattish, spreading, bracteiform; the interior (perhaps rather to be considered chaff of the receptacle, as described by Nuttall) infolded and laterally compressed, boat-shaped and very gibbous, enclosing the fertile flowers, and forming a permanent cartilaginous covering to the smooth obovate and gibbous compressed achenia. Pappus none.—Low woolly herbs with the aspect of Filago or Gnaphalium.

§ *Fructiferous scales of the involucre not echinate, woolly when young.*—Bombycilæna, *DC.*

1. *M. Californicus* (Fisch. & Meyer): clusters lateral and terminal; fructiferous scales compressed-navicular, semi-obcordate; the inner margin straight, terminated by an erect mucroniform appendage with a scarious apex.—*Fisch. & Meyer, ind. sem. St. Petersb.* 1835, *p.* 42; *DC. prodr.* 7. (*mant.*) *p.* 283.

β. angustifolia: slender; leaves linear, acute; heads very woolly when young; exterior or bracteate involucral scales oval, concave, scarious with a linear green centre.—M. (Rhyncholepis) angustifolius, *Nutt.! in trans. Amer. phil. soc. l. c.*

California at Bodega, *Fischer & Meyer.* *β.* St. Barbara, *Nuttall!*—Said to resemble M. erectus, but the heads with a more scattered and shorter wool; while Mr. Nuttall's plant is more slender than that species, the young heads with a longer wool; but the fruit &c. exactly corresponding to the character of the Russian botanists, who do not notice the leaves, &c. Perhaps there are two nearly allied Californian species.

An [illegible], Nutt. [illegible].

64. PSILOCARPHUS. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 340.

Heads solitary or clustered, many-flowered; the fertile flowers 8–30 in several series, pistillate, with a filiform corolla, each enclosed in an involute involucral scale or chaff of the receptacle; the 5–8 central staminate, with a dilated infundibuliform 4–5-toothed corolla, destitute of ovaries, naked. Receptacle subglobose; the chaff and similar involucral scales (as the outermost may be deemed) membranaceous, woolly, reticulated, infolded, and cucullate, forming thin obovoid or somewhat gibbous loose coverings to the very smooth oblong terete or slightly compressed achenia. Branches of the style short and filiform, in the sterile flowers minutely hairy. Pappus none.—Very small diffusely branched and depressed woolly annuals, with the aspect of Evax, &c. (natives of the western coast of America); with linear or spatulate-oblong entire and sessile leaves, which are alternate, and irregularly involucrate around the terminal or lateral sessile heads or clusters.

This certainly distinct genus is well described by Nuttall; except that, although he mentions a beak or uncinate tips to the fructiferous chaff in some species, he has not alluded to the true structure of this inconspicuous appendage, which in fact exists in all the species. It consists of a small hyaline scale, forming the organic apex of the fruit-enclosing chaff, and, as it were, articulated with it at the summit of the anterior fissure: at first it is erect or spreading; but after impregnation it is more or less inflexed, covering the fissure like an operculum. In P. tenellus, this scale is broad, ovate, and nearly as large as the chaff itself at the time of impregnation: in P. Oreganus it is similar in form, and in the full-grown chaff about half the length of the fissure; in P. globiferus and the nearly allied P. brevissimus, it is smaller in proportion to the chaff, ovate-oblong, and apparently somewhat deciduous.

1. *P. globiferus* (Nutt.! l. c.): very woolly, decumbent, much branched;

leaves oblong-linear, the floral ones broader, obtuse; fertile flowers 20 or more; the obovoid inflated fructiferous chaff forming globose very woolly heads, lateral and terminal.—Micropus globiferus, *Bertero, in DC. prodr.* 5. *p*. 460*?*

St. Barbara, California, *Nuttall!* April.—"Plant not an inch high, spreading out 5 or 6 inches:" the woolly bracteate heads numerous, nearly one-fourth of an inch in diameter; the woolliness of the leaves somewhat deciduous: the inflated fruit-bearing chaff between 1 and 2 lines long.—Also a native of Chili, if it is really the Micropus globiferus of Bertero, which is uncertain, although that species doubtless belongs to this genus.

2. *P. brevissimus* (Nutt.! l. c.): stem minute, simple, producing mostly a single very woolly head; fertile flowers 8–10; the fructiferous chaff obovoid-oblong; leaves oblong-lanceolate, acute.

"Plains of the Oregon River, in inundated tracts.—Extremely dwarf (perhaps not always so); about 4 lines high; the solitary capitulum, though rather large, sessile on about the third set of leaves, and so downy as to look like a pellet of cotton." *Nuttall.*—Very nearly allied to the preceding. Mr. Nuttall suspects it may possibly prove to be the Micropus minimus of De Candolle.

3. *P. Oreganus* (Nutt.! l. c.): canescently tomentose throughout, diffusely branched and procumbent; leaves linear; fertile flowers 20 or more; fructiferous scales obovoid, tomentose.

"Inundated places, near the Oregon and the outlet of the Wahlamet.—Nearly allied to P. globiferus; but with much narrower leaves; with none of the long arachnoid hairs of that species; the scales of the receptacle also smaller." *Nuttall.*

4. *P. tenellus* (Nutt.! l. c.): tomentose-canescent; the base of the ascending clustered stems and the lower leaves becoming glabrous; lower leaves spatulate-linear; the upper and floral ones oblong-spatulate; heads small, mostly terminal; fertile flowers 20 or more; fructiferous scales obovoid-oblong, gibbous, tomentose.

St. Barbara, California, *Nuttall!* April.—Plant 1–2-4 inches high, with the stems slender. Heads about 2 lines in diameter. Achenia acute at each end.

65. STYLOCLINE. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 338.

Heads subglobose, many-flowered; the fertile flowers pistillate, in several series included in a carinate fold of the chaff of the receptacle, with a very slender and filiform truncate corolla; the 3–4 central staminate, with a tubular minutely 5-toothed corolla, destitute of ovaries, naked. Receptacle slender and elongated, cylindrical; the chaff imbricated, broadly ovate, concave, scarious, with a green herbaceous carinate-saccate keel in which the fertile flowers are enclosed, woolly towards the base; the scales of the involucre about 5, similar, but destitute of the saccate keel. Achenia very smooth, somewhat laterally compressed, acute at the base, slightly lunate. Pappus of the fertile flowers none; of the sterile composed of 3–5 barbellate-scabrous bristles as long as the corolla.—An annual tomentose woolly low herb, diffusely branched and decumbent, with small linear entire sessile leaves. Heads (about 3 lines in diameter, yellowish-white) in sessile clusters of 3–5 together at the extremity of the branches and in the upper axils.

S. gnaphaloides (Nutt.! l. c.)

Near Monterey, California, *Nuttall!*—Plant about 6 inches high.—Chaff, including the minute achenia, at length deciduous from the slender spirally punctate receptacle.—The fertile flowers have the same corolla as the preceding genera; and what Mr. Nuttall describes as a few long chaffy hairs produced at the apex of the receptacle, is the pappus of the sterile flowers.

Subtribe 4. INULEÆ, *Cass.*—Heads mostly radiate and heterogamous, never diœcious. Receptacle not chaffy. Anthers caudate at the base.—Leaves alternate. Heads not glomerate. Ray-flowers of the same color as the disk.

66. INULA. *Linn.; Gærtn. fr. t.* 170; *DC. prodr.* 5. *p.* 463.

Heads many-flowered; the ray-flowers in a single series, pistillate, but sometimes infertile, ligulate, or rarely somewhat tubular; those of the disk tubular, perfect. Involucre imbricate in several series. Receptacle flat or somewhat convex, naked. Anthers bisetose at the base. Achenium terete or 4-sided. Pappus a single series of capillary slightly scabrous bristles.—Mostly perennial herbs (natives of Europe and Asia), with the cauline leaves often clasping. Heads solitary or corymbose at the summit of the peduncles. Flowers yellow.

§ *Exterior scales of the involucre broadly ovate, foliaceous; the inner obovate-spatulate, obtuse: achenia 4-sided, glabrous; rays ligulate, numerous, narrowly linear.*—CORVISARTIA, Merat, Cass.

1. *I. Helenium* (Linn.): leaves (large) velvety-tomentose beneath, denticulate: the radical ones ovate, tapering into a petiole; the cauline partly clasping; heads solitary at the summit of the stout somewhat corymbose peduncles.—*Linn.! spec.* 2. *p.* 881; *Fl. Dan. t.* 728; *Lam. ill. t.* 680; *Darlingt. fl. Cest. p.* 476; *DC.! l. c.* Aster Helenium, *Scopoli.* Corvisartia Helenium, "*Merat, fl. Par.*;" *Cass. in dict. l. c.* 10. *p.* 572. Helenium seu Exula Campana, &c., *Clayt.*

Road-sides and about houses, introduced from Europe, and naturalized in many places.—The thick and branching perennial root is mucilaginous and slightly bitter, and is employed as a popular remedy.—The old officinal name is *Enula Campana*, whence *Elecampane*.

Subtribe 5. ECLIPTEÆ, *Less.*—Heads radiate, heterogamous, never diœcious. Receptacle chaffy. Anthers not caudate at the base. Pappus none, or awn-like.—Leaves opposite. (Plants with nearly the habit and structure of Heliantheæ, except the style, which corresponds with Asteroideæ.)

67. BORRICHIA. *Adans. fam.* 2. *p.* 130; *DC. prodr.* 5. *p.* 488.

Heads many-flowered; the ray-flowers ligulate, pistillate, in a single series; those of the disk perfect and tubular. Involucre hemispherical, imbricated; the exterior scales foliaceous. Receptacle flat, covered with lanceolate rigid persistent chaffy scales, as long as, or sometimes shorter than the flowers of the disk. Corolla of the ray short and broad; of the disk scarcely dilated at the throat, 5-toothed. Anthers blackish, tipped with an ovate appendage. Branches of the style (in the disk) elongated, rather thick, somewhat terete, acutish, hispid from the summit to near the base. Achenia somewhat cuneiform, 3–4-angled, crowned with a short coroniform 4-toothed (or nearly obsolete) pappus.—Shrubby (American and mostly tropical) maritime plants. Leaves opposite and somewhat connate, oblong or linear, coriaceous or fleshy. Heads solitary, pedunculate. Flowers yellow.

1. *B. arborescens* (DC.): glabrous; leaves lanceolate, mucronately acute, narrowed at the base, entire; exterior scales of the involucre ovate, rather acute, appressed; the interior obtuse, membranaceous; chaff of the receptacle spatulate, obtuse.—Buphthalmum arborescens, *Linn. spec.* (*ed.* 2.) 2. *p.* 1273. Asteriscus, &c., *Dill. Elth. t.* 38, *f.* 43. Corona-solis frutescens, &c., *Plum. Amer. ed. Burm. t.* 16, *f.* 2. Diomedea unidentata, *Cass. in dict. l. c.* 13. *p.* 284. D. glabrata, *H. B. & K.*
Key West, *Mr. Blodgett!*—A large shrub.

2. *B. frutescens* (DC.): canescent with a minute appressed silky pubescence; leaves lanceolate or spatulate, obtuse, attenuate and usually 1–2-toothed towards the base; those of the branches often toothless, sometimes linear; exterior scales of the involucre somewhat spreading, rather acute; the interior and the chaff of the receptacle cuspidate with a rigid point.—*DC.! prodr.* 5. *p.* 489. Buphthalmum frutescens, *Linn.! spec.* (*ed.* 1) 2. *p.* 903; *Walt.! Car. p.* 212; *Michx.! fl.* 2. *p.* 130; *Pursh, fl.* 2. *p.* 563; *Ell. sk.* 2. *p.* 408. Asteriscus frutescens &c. *Dill. Elth. t.* 38, *f.* 44. Chrysanthemum fruticosum &c., *Catesb. Car.* 1. *t.* 93. Diomedea bidentata, *Cass. l. c.*
On the coast, Virginia! to Florida! and Key West! June–Oct.—A small shrubby plant. The leaves vary from obovate or broadly spatulate to linear; in all the states being either obtuse or acuminate-mucronate, entire, or with one or two sharp salient teeth near the base, or remotely denticulate throughout: the exterior scales of the involucre are often rather appressed; the inner either canescent, or nearly glabrous with ciliate margins, and the spinous points of the chaff are at first rather shorter than the flowers. Hence perhaps B. argentea, B. Peruviana, and Buphth. lineare, *Willd.* are not sufficiently distinct.

68. ECLIPTA. *Linn. mant. Gærtn. fr. t.* 169; *DC. prodr.* 5. *p.* 489.

Heads many-flowered; the ray-flowers pistillate, ligulate, short, in a single series; those of the disk tubular and perfect. Scales of the involucre 10–12, in a double series, foliaceous, ovate-lanceolate, somewhat acuminate. Receptacle flat, furnished with linear-filiform or bristly chaff, as long as the achenia. Corolla of the ray-flowers with a narrow ligule rather shorter than the involucre; of the disk inflated above, 4-(rarely 5-?) toothed. Appendages of the style hairy. Achenia 3–4-sided; those of the disk mostly by compression 2-sided, the sides roughened or tuberculate, somewhat hairy at the summit. Pappus none, or an obsolete denticulate crown.—Chiefly annual scabrous or strigose herbs; the stems erect, diffuse, or procumbent. Leaves opposite, serrate or nearly entire, lanceolate or oblong, feather-veined, or somewhat triplinerved. Heads on axillary solitary or geminate, or terminal and ternate, peduncles. Flowers white. Anthers brownish. Juice of the stem turning black.

1. *E. erecta* (Linn.): more or less strigose throughout with closely appressed rigid hairs; stem erect, ascending, or decumbent; leaves lanceolate or oblong-lanceolate, acute or attenuate at each end, sparingly or obscurely serrate; scales of the involucre acute or acuminate; pedicels 3–6 times the length of the head.—*Linn.! mant. p.* 157, (*pl. Gronov. &c.*); *Lam. ill. t.* 687; *Pursh, fl.* 2. *p.* 561; *DC.! prodr.* 5. *p.* 490. E. procumbens, *Michx.! fl.* 2. *p.* 129; *Pursh, l. c.*; *Ell. sk.* 2. *p.* 403; *DC.! l. c.* Vérbesina alba, *Linn. spec.* 2. *p.* 902. Eupatorio-phalacron &c., *Dill. Elth. t.* 113, *f.* 137. Scabiosa conyzoides &c., *Pluk. alm. t.* 109, *f.* 1. Amellus Carolinianus, *Walt. Car. p.* 313. Grangea lanceolata, *Poir.* ex *DC.*

β. brachypoda: pedicels as long as the heads, or about twice their length. —E. brachypoda, *Michx. l. c.* (but the corolla of the disk 4-cleft!), scarcely of *DC.*

Banks of streams, and in damp sandy soil, Maryland! and Kentucky! to Florida! and Louisiana! common. (Also at Mulgrave Sound on the N. W. Coast, according to De Candolle.) *β.* Maryland! Kentucky! and Louisiana! with the ordinary form. June–Oct.—Stems 1–3 feet long, often rooting at the base. Heads small; the flowers rather inconspicuous. Chaff of the receptacle fringed. In all the specimens from numerous localities which we have examined, we have, like Elliott, never found a 5-cleft corolla, and therefore suspect some mistake on the part of Walter and Michaux. The plant which in every other respect accords with the E. brachypoda, *Michx.*, only differs in its shorter pedicels, upon which we think little dependence can be placed. Our plant frequently has the peduncles 5 to 6 times the length of the head; and we have seen East Indian specimens of E. erecta with the peduncles as short as in E. brachypoda.

TRIBE IV. SENECIONIDEÆ. *Less.*

Heads heterogamous, homogamous, or heterocephalous (diœcious or monœcious). Style (in the perfect flowers) cylindraceous above; the branches linear (somewhat thickened or convex externally), penicillate or hairy at the apex, either truncate, or produced into a cone, or a more or less elongated and hispid appendage; the stigmatic lines terminating in the base of the cone or appendage, not confluent.—Leaves opposite or alternate.

CONSPECTUS OF THE SUBTRIBES.

Subtribe 1. MELAMPODINEÆ. Flowers all unisexual; the staminate and pistillat either occupying the same, or different heads, in the same or different individuals Anthers not caudate. Pappus never of bristles.

Subtribe 2. HELIANTHEÆ. Heads heterogamous and radiate, or homogamous an discoid. Receptacle partly or entirely chaffy. Pappus none, or coroniform, o awned, or of few squamellæ. Anthers blackish, not caudate. Leaves ofte opposite.

Subtribe 3. FLAVERIEÆ. Heads 1–few-flowered, densely aggregated, heterogamou Leaves opposite.

Subtribe 4. TAGETINEÆ. Heads heterogamous and radiate, or homogamous an discoid. Receptacle not chaffy. Pappus awned or setose. Involucre with th scales in a single series and mostly united, dotted, like the opposite leaves, wit large pellucid glands.

Subtribe 5. HELENIEÆ. Heads mostly heterogamous. Pappus of several or nu merous scarious chaffy scales, in a single series, distinct, rarely none. Leave mostly alternate.

Subtribe 6. ANTHEMIDEÆ. Heads mostly heterogamous. Pappus none or coroniform, rarely squamellate. Anthers not caudate. Branches of the style truncate and bearded at the apex, rarely terminated by a short cone. Leaves mostly alternate.

Subtribe 7. GNAPHALIEÆ. Heads homogamous and discoid, or rarely heterogamous. Anthers caudate. Pappus of capillary or setaceous bristles, very rarely none. Leaves mostly alternate.

Subtribe 8. SENECIONEÆ. Heads homogamous or heterogamous, discoid, or radiate. Anthers not caudate. Pappus of capillary bristles, or very rarely wanting in the exterior flowers. Leaves alternate.

Subtribe 1. MELAMPODINEÆ, *DC.* (Polygamia Necessaria, *Linn.*)—Flowers all unisexual; the pistillate and staminate flowers either in different individuals, or in different heads of the same plant, or in the same head. Anthers not caudate at the base. Receptacle almost always chaffy. Pappus none, or somewhat coroniform, or awned, never of bristles.

CONSPECTUS OF THE GENERA.

Div. 1. MELAMPODIEÆ.—Heads monœcious, radiate. Achenia corticate.

69. **MELAMPODIUM.** Inner scales of the involucre investing the achenia.

Div. 2. MILLERIEÆ.—Heads monœcious, radiate. Achenia not corticate nor winged.

70. **BLENNOSPERMA.** Receptacle naked. Achenia pulverulent-papillose.
71. **POLYMNIA.** Receptacle chaffy. Achenia obovoid: pappus none.
72. **CHRYSOGONUM.** Receptacle chaffy. Achenia obcompressed 4-angular: pappus coroniform-toothed.

Div. 3. SILPHIEÆ.—Heads monœcious, radiate; the rays deciduous. Achenia not corticate, obcompressed, or winged. Pappus of two teeth or short awns.

73. **SILPHIUM.** Achenia winged, in more than one series.
74. **BERLANDIERA.** Achenia wingless, one adhering to each inner involucral scale.
75. **ENGELMANNIA.** Achenia wingless, free: pappus 2-auriculate-squamellate.

Div. 4. PARTHENIEÆ.—Heads monœcious, radiate: rays marcescent. Achenia not corticate, obcompressed.

76. **PARTHENIUM.** Achenia 5; their callous margins united at the base with the chaff of 2 contiguous sterile flowers.

Div. 5. IVEÆ.—Heads monœcious, not radiate. Anthers scarcely united.

77. **CYCLACHÆNA.** Heads glomerate-paniculate, bracteate: the central flowers abortive.
78. **IVA.** Heads bracteate. Receptacle chaffy. Flowers glabrous.
79. **PICROTHAMNUS.** Receptacle naked. Achenia and corolla woolly.

Div. 6. AMBROSIEÆ.—Heads heterocephalous; the sterile and fertile heads in the same or different plants, not radiate. Anthers distinct.

80. **AMBROSIA.** Fertile involucre 1-celled, 1-flowered, not spinose throughout.
81. **FRANSERIA.** Fertile involucre 1–4-celled, spinose; the sterile 8–12-toothed.
82. **XANTHIUM.** Fertile involucre 2-celled; the scales of the sterile distinct.

Div. 1. Melampodieæ, *DC.*—Fertile and sterile flowers in the same heads; the former several, ligulate; the latter central, tubular. Achenia corticate* (that is, invested and concrete with the scales of the involucre or chaff of the receptacle). Pappus none. Anthers united.

69. MELAMPODIUM. *Linn.; Gærtn. fr. t.* 169; *R. Br. in Linn. trans.* 12. *p.* 104.

Heads many-flowered; the ray-flowers 5–10, in a single series; those of the disk sterile by the abortion of the style. Involucre double; the exterior of 3–5 flat and spreading foliaceous scales; the inner as many as the ray-flowers and enclosing their achenia. Receptacle convex or subulate-conical, chaffy; the chaff membranaceous, deciduous. Style in the sterile-flowers undivided and hairy above. Achenia of the disk abortive; of the ray obovoid, smooth, slightly curved, invested by the inner scales of the involucre, which are often rugose or tuberculate, or cucullate at the summit, and either truncate or produced into 1–3 teeth or awns.—Herbaceous or suffruticose (chiefly Mexican) plants, with dichotomous stems, opposite sessile leaves, and terminal or alar peduncles bearing a single head. Flowers yellow, or the rays rarely (in two species?) white.

1. *M. ramosissimum* (DC.): stem slightly suffruticose, much branched, glabrous; leaves linear, pubescent with somewhat appressed hairs, entire, or remotely dentate-lobed or sinuate; peduncles longer than the leaves; rays oblong-linear, small (yellow); exterior scales of the involucre oval, pubescent externally; the interior involving the achenia, tuberculate at the base, the summit expanded into a broad hood, with a dorsal uncinate acumination. *DC.! prodr.* 5. *p.* 518.

Texas, *Berlandier!* (v. sp. in *herb. DC.*)

2. *M. leucanthum:* suffruticose, much branched at the base, strigose throughout and dotted with minute resinous globules; leaves very numerous, linear, the lower linear-spatulate, obtuse, entire, strigose-hispid above; peduncles much longer than the leaves; rays oval-oblong, emarginate, thrice the length of the ovate and hairy exterior scales of the involucre; the inner enclosing the achenia, tuberculate-scabrous towards the base, dilated above into a short smooth hood, truncate at the summit, with the margin entire and involute.

Texas, *Dr. Riddell!*—Plant 6–10 inches high. Leaves 1–2 inches long, somewhat canescent, above with hispid, beneath with weak hairs. Rays about half an inch long. Chaff of the receptacle laciniate-fimbriate at the summit.—Nearly allied to (and possibly not distinct from) M. cinereum, *DC.*, a Mexican species collected by Berlandier, which is also remarkable for having white rays.

Div. 2. Millerieæ, *DC.*—Fertile and sterile flowers in the same heads; the former few, ligulate, or sometimes tubular and 3-cleft; the latter central, tubular. Achenia not corticate, (that is not coherent with the scales of the involucre or chaff of the receptacle when invested by these), or winged. Pappus none, or coroniform. Anthers united.

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* We have used the term as employed and defined by De Candolle in this place. But in the Heliopsideæ, and other places, this author also terms those achenia *corticate* in which the exterior covering (calyx-tube) is separable from the interior.

Baltimora recta, Linn. (Fougerouxia recta, *DC.*) is a native of the coast of Mexico, and not of Maryland, as Linnæus supposed, being misled by the synonym he adduced from Plukenet (Chrysanthemum Americanum, caule alato, amplioribus foliis binatis, &c. *Pluk. mant. p.* 46, *t.* 342, *f.* 3.), which probably belongs to Verbesina Siegesbeckia.

70. BLENNOSPERMA. *Less. syn. p.* 267; *DC. prodr.* 7. *mant. p.* 288.

[illegible] middle -

Coniothele & Apalus, *DC.*

Heads many-flowered; the ray-flowers 5–10, in a single series, pistillate, the elliptical ligule obtuse at the base and articulated with the ovary, entirely destitute of tube; those of the disk numerous, tubular, sterile by the abortion of the ovary. Scales of the involucre 5–10, elliptical or oblong, membranaceo-herbaceous, nearly in a single series. Receptacle at length convex, not chaffy. Corolla of the disk short, with a much dilated 4–5-lobed limb. Anthers oval. Style in the fertile flowers with short obtuse branches; in the sterile capitate. Achenia (of the disk none,) of the ray oblong, terete, narrowed towards the base, canescent with pulverulent papillæ (which when moistened open at the extremity, or by 2 valves, and emit 2 long filaments of extreme tenuity, soon forming an apparently gelatinous mass equal in thickness to the achenia itself), destitute of pappus.—Annual slender and somewhat branching small herbs (Chilian and Californian), with alternate pinnately-parted leaves; the branches naked and somewhat pubescent above, and mostly terminated by a single small head. Rays, disk-flowers, and anthers pale yellow.

1. *B. Californicum:* scales of the involucre and rays 7–10; a series of fertile apetalous flowers alternating with the rays; branches of the style in the fertile flowers oval, flat.—Coniothele Californica, *DC.! prodr.* 5. *p.* 531; *Hook. & Arn.! bot. Beechey, suppl. p.* 352.

California, *Douglas!*—Plant 4–6 inches high, slightly pubescent when young.—Beyond the characters given above, the Californian plant scarcely differs from B. Chilense, except in the rather fewer disk-flowers of the latter, the linear-oblong branches of the fertile style, and the evidently 5-sulcate-striate achenia. In both, the elliptical ray is immediately sessile on the ovary, and when it falls off leaves a round perforation close to its base. The only distinction of any generic consequence between Blennosperma and Coniothele is entirely unnoticed by De Candolle, and may not be constant; but if it prove a permanent character, it will be proper to preserve the name of Coniothele for the section. It consists in the presence of a series of fertile flowers alternate with the rays, and exactly similar to them, except that, instead of a sessile ligule, they bear a minute deciduous ring, which represents the ligule reduced to its mere insertion. These apetalous flowers we uniformly observe in Californian specimens, but do not find in the Chilian plant.—An excellent account of the structure of the papillæ of the achenia, and the included spiral filaments, as observed in some other Compositæ, is given by Decaisne, in *Ann. sci. nat.* (*ser.* 2.) 6. *p.* 251.

71. POLYMNIA. *Linn.; Gærtn. fr. t.* 174, *f.* 2; *DC. prodr.* 5. *p.* 514.

Heads many-flowered; the ray-flowers (5–10 or more) pistillate, in a single series; those of the disk tubular, sterile. Scales of the involucre in a double series; the exterior about 5, large and spreading, foliaceous, ovate or lanceolate; the interior smaller, membranaceous, partly embracing the fertile achenia. Receptacle flat, chaffy; the chaff scarious, lanceolate or oblong. Corolla of the disk inflated above, thin and pellucid, with 5 short teeth. Style in the sterile flowers 2-cleft; the branches hairy. Achenia glabrous, destitute of pappus; those of the disk abortive, terete; of the ray thick, obovoid, slightly compressed laterally, wingless.—Perennial (American) herbs, usually viscid-pubescent, with an unpleasant odor. Leaves opposite, or sometimes alternate (at least the uppermost), large, dilated, membranaceous, variously angled, lobed, or cleft, often with stipule-like appendages at the base. Heads paniculate-corymbose. Flowers yellow or yellowish.

§ 1. *Rays inconspicuous, shorter than the involucre.*—Eupolymnia. (Alymnia, *Neck.* Polymniastrum, *Lam.*)

1. *P. Canadensis* (Linn.): viscid-pubescent; leaves petioled, opposite; the uppermost alternate, deltoid-ovate or rhomboidal, often 3–5-angled or lobed, or somewhat hastate; the lower deeply pinnatifid or lyrate; involucre very viscid and hairy; the exterior scales ovate-lanceolate, acuminate, rather larger than the (5–8) interior; rays obovate-cuneiform, obtusely 3-lobed at the summit; achenia crowned with a protuberant ring.—*Linn.! spec.* 2. *p.* 926, ~~& *amœn.*~~ *acad.* 3. *t.* 1, *f.* 5; *Lam. ill. t.* 711; *Michx.! fl.* 2. *p.* 147; *Pursh! fl.* 2. *p.* 579; *Ell. sk.* 2. *p.* 471; *Darlingt.! fl. Cest. p.* 476; *DC.! prodr.* 5. *p.* 515. P. variabilis, *Poir. dict.* 5. *p.* 505? Polymniastrum, *Lam. ill. t.* 712?

Hill-sides in shady rich soil along streams, Canada! and Northern States! to the mountains of Carolina! and west to Missouri. July.–Aug.—Stem 2–5 feet high. Leaves very thin, pale green. Heads small. Flowers very pale yellow or ochroleucous.

§ 2. *Rays flat, much longer than the involucre.*—Polymnactis. (Polymnia, *Lam.*, *Cass.*)

2. *P. Uvedalia* (Linn.): scabrous-pubescent or somewhat hirsute; leaves opposite, triplinerved, broadly ovate or deltoid; the lower large, nearly as broad as long, palmately lobed and sinuate, abruptly narrowed into a winged petiole; the uppermost nearly sessile, sinuate-toothed; involucre slightly pubescent and viscid; the exterior scales oblong-ovate, obtuse, ciliate, many times larger than the (10–14) ovate-lanceolate acuminate interior ones; rays linear-oblong, 3-toothed at the apex, thrice the length of the inner scales of the involucre.—*Linn.! spec.* (*ed.* 2) 2. *p.* 1303; *Lam. ill. t.* 711, *f.* 2; *Michx.! fl.* 2. *p.* 147; *Pursh, l. c.*; *Ell. l. c.*; *Darlingt. l. c.*; *DC.! prodr.* 5. *p.* 515. Osteospermum Uvedalia, *Linn. spec.* (*ed.* 1) *p.* 923. Chrysanthemum angulosis platani-foliis, &c., *Pluk. alm. t.* 83, *f.* 3. C. perenne Virginianum, &c., *Moris. hist.* 3. *sect.* 6. *t.* 7, *f.* 55.

Rich dry soil, New York! and Pennsylvania! (rare) to Georgia! Louisiana! and Arkansas! and Missouri! June–Aug.—Stem stout, grooved and angled, nearly glabrous below, 4–10 feet high. Lower leaves about a foot wide; the wing of the petioles sinuate or pinnatifid. Heads large; the rays an inch long, 10–15 in number, bright yellow; the corolla of the disk dull yellow. Achenia large, striate.

72. CHRYSOGONUM. *Linn.; Gærtn. fr. t.* 174; *DC. prodr.* 5. *p.* 510.

Heads many-flowered; the ray-flowers about 5, pistillate; those of the disk sterile. Involucre double, each of about 5 scales; the exterior foliaceous, oblong, longer than the disk; the interior chartaceous, roundish, concave, embracing the fertile flower in its axil. Receptacle flat; the linear obtuse persistent chaff subtending the sterile flowers; 2 or 3 usually adherent to the base of each inner involucral scale. Corolla of the disk cylindraceous, 5-toothed. Style in the sterile flowers hispid above, undivided, or sometimes 2-cleft at the apex. Achenia of the ray obovate, obcompressed, 4-angled, somewhat convex on the back, enclosed in a scale of the involucre; of the disk linear, abortive. Pappus small, coroniform, 2–3-toothed, and divided to the base on the inner side, persistent.—A low tomentose-hirsute perennial herb, nearly acaulescent when it begins to flower, producing several stems, some of which are erect or ascending and floriferous, others prostrate and stoloniferous. Leaves opposite, or clustered at the base, on long petioles, ovate or spatulate, crenate. Peduncles solitary, simple, naked, at first short, at length elongated. Flowers bright yellow.

C. Virginianum (Linn.)—*Lam. ill. t.* 713; *Gærtn. fr.* 2. *p.* 436, *t.* 174 (the pappus bad); *Walt.! Car. p.* 217; *Michx.! fl.* 2. *p.* 148; *Pursh! fl.* 2. *p.* 579; *Ell.! sk.* 2. *p.* 472. C. Virginianum & diotostephus, *DC.! l. c.* Diotostephus repens, *Cass. in dict. sci. nat.* 48. *p.* 453. Chrysanthemum Virginianum, &c., *Pluk. alm. t.* 83, *f.* 4, *& t.* 242, *f.* 3.

Dry fertile soil, Maryland! to Florida! and Illinois! to Louisiana! April–July.—We are confident that Cassini has founded two genera, and De Candolle two species, upon one and the same plant. We have never seen a pappus like Gærtner's figure, nor exactly as Cassini describes his Diotostephus; but it is almost always as stated by Michaux and Elliott, that is, 3-toothed; and the middle tooth is often shorter, or irregularly crenate, and probably sometimes nearly wanting, when it would accord with Cassini's character. The plant, when it commences flowering, presents only a tuft of radical leaves (with rather short petioles), and a single head on a short radical peduncle; but the succeeding leaves are borne on elongated petioles, the ascending stems at length 6–12 inches high, and the peduncles which are always short before the heads expand, often attain the length of 2 or 3 inches. When old, the leaves become rather glabrous.

Div. 3. SILPHIEÆ, *DC.*—Fertile and sterile flowers in the same heads; the former (3–20) ligulate, the rays deciduous; the latter numerous, central, tubular. Fertile achenia obcompressed, sometimes winged, not corticate, destitute of pappus, or mostly 2-toothed or 2-awned. Anthers united.

73. SILPHIUM. *Linn.; Gærtn. fr. t.* 171; *Schkuhr, handb. t.* 262.

Heads many-flowered; the ray-flowers numerous, pistillate, the ligules in a single series, but the flat ovaries in 2–3 rows; those of the disk tubular, sterile. Involucre broadly campanulate; the scales appressed at the base, more or less spreading or loose and foliaceous at the summit, imbricated in several series; the innermost (those next the achenia) very small and chaffy. Receptacle small, flat, or somewhat turbinate when old; the chaff linear, flat, or slightly involute around the sterile ovaries. Corolla of the ray with an elongated spreading ligule; of the disk cylindrical; the teeth very short, somewhat thickened and glandular, often pubescent or hairy externally. Style in the sterile flowers undivided, much elongated, hispid. Achenia of the ray broad and flat, obcompressed, imbricated in 3–4 series, surrounded with a wing, which is notched at the summit, and usually confluent with 2 callous, subulate, or somewhat awn-like (often nearly obsolete) teeth, which represent the pappus; those of the disk abortive, slender, with an obsolete coroniform pappus.—Stout perennial herbs (natives of the United States and Texas), mostly hispid or scabrous, with a copious resinous juice. Leaves alternate, opposite, or verticillate, entire, serrate, or lobed. Heads (large) corymbose, panicled, or solitary. Flowers yellow.

* *Stem terete, virgate or nearly naked: leaves large, alternate, or radical and on long petioles, often sinuate, lobed, or pinnately parted.*

1. *S. laciniatum* (Linn.): hispid with white spreading hairs; leaves pinnately parted, mostly petioled, but dilated and clasping at the base; the segments lanceolate or linear, sinuate-toothed, incised, or pinnatifid, or sometimes entire, acute; heads (very large) few, racemose-spicate; scales of the involucre ovate, hispid and ciliate, produced into a long rigid and usually squarrose acuminate appendage; achenia orbicular-obovate, with a manifest and scarious wing, deeply emarginate.—*Linn.! spec.* 2. *p.* 919; *Linn. f. dec. p.* 5, *t.* 3; *Ait.! Kew.* (*ed.* 1) 3. *p.* 267; *Michx.! fl.* 2. *p.* 145; *Pursh? fl.* 2. *p.* 577; *Jacq. f. eclog.* 1. *t.* 90; *DC.! prodr.* 5. *p.* 512; *Hook. compan. to bot. mag.* 1. *p.* 99. (excl. syn. E. pinnatif.) S. spicatum, *Poir. dict.* 5. *p.* 157. S. gummiferum, *Ell. sk.* 2. *p.* 460.

β. cauline leaves numerous towards the lower part of the stem, sessile and clasping, ovate-lanceolate, laciniate-pinnatifid.

Prairies from Iowa! Wisconsin! Missouri! Illinois! and Ohio! to Kentucky! Alabama! Louisiana! Arkansas! and Texas! *β*. Prairies of Alabama, *Mr. Buckley!* July–Sept.—Root thick. Plant exuding a copious resin, 3–11 feet high. Stem simple, striate-grooved and nearly glabrous at the base, somewhat naked above, clothed, as also the young heads, veins of the leaves &c., with large very white jointed hairs arising from rigid papillæ. Lower leaves 12–30 inches long, often bipinnatifid, with an ovate circumscription, sometimes lanceolate and simply pinnately parted, with the segments narrow and rather remote, either entire or toothed. Heads frequently 2 inches in diameter, without including the rays, which usually exceed the involucre: the terminal one flowers earliest, and 2 or 4 others appear later in the axils of often remote bracts, or of the upper leaves, either sessile or peduncled. The var. *β*., which came from the same region as Elliott's S. gummiferum, does not however so well accord with his description as the ordinary S. laciniatum, which varies greatly in foliage. In this variety the incisions of the cauline leaves do not reach more than half-way to the midrib.—*Rosin-weed.*

2. *S. terebinthinaceum* (Linn.): stem and peduncles glabrous; leaves ovate and ovate-oblong, mostly cordate at the base, sharply serrate-toothed,

hispid-scabrous, especially beneath; the radical ones very large and on long petioles; the cauline very few, oblong; heads (rather large) in a loose irregular panicle; scales of the involucre glabrous, the exterior orbicular, the others obovate or oval, obtuse; rays numerous; achenia obovate, very narrowly winged, emarginate–2-toothed.—*Linn. suppl. p.* 383; *Jacq. hort. Vindob.* 1. *t.* 43; *Gærtn. fr. t.* 171; *Ait.! Kew.* (*ed.* 1) 3. *p.* 267; *Michx.! fl.* 2. *p.* 145; *Schkuhr, handb. t.* 262; *Pursh, l. c.*; *DC.! l. c.*; *Hook. bot. mag. t.* 3525; not of *Ell.*

Prairies and dry open woods, Michigan! and throughout the Western States! to Louisiana! and the western part of Georgia! July–Sept.—Stem 4–9 feet high, leafless except near the base, exuding a copious resinous juice. Radical leaves often more than 2 feet long, resembling those of the *Burr-dock*, but more rigid (the plant is sometimes called *Prairie Burr-dock*); the short hispid hairs arising from a broad papillose base, in which a resinous matter is frequently deposited, and the cuticle desquamates, so that the leaf appears thickly sprinkled with white scurfy dots, particularly the lower surface. Heads about an inch in diameter, excluding the rays, which are an inch or more long. The narrow wings of the achenia either entirely confluent with the teeth of the achenia, which then appears rather deeply emarginate; or the wings are somewhat contracted at the summit, which is then more obtusely toothed, and less deeply emarginate.

3. *S. pinnatifidum* (Ell.): glabrous, except the petioles and lower surface of the leaves, which are more or less hirsute and scabrous; leaves large, oblong, varying from pinnately incised to deeply pinnatifid; the radical on long petioles, slightly cordate, the cauline few and cuneiform at the base; exterior scales of the involucre orbicular, the inner broadly oval; rays numerous; achenia oval-obovate, very narrowly winged, obtusely emarginate and slightly 2-toothed.—*Ell.! sk.* 2. *p.* 462; *DC. prodr.* 5. *p.* 512.

Prairies, western part of Georgia and Alabama, *Elliott! Mr. Buckley!* Ohio, *Dr. Riddell! Mr. Sullivant!* Aug.–Sept.—Plant with the habit of the preceding, and with equally large leaves and heads, rays an inch and a half long. Achenia with 2 very short and rounded callous teeth.—As this plant bears in its foliage the same relation to the true S. terebinthinaceum that S. compositum of Michaux does to the S. terebinthinaceum of Elliott, and presents no other sufficiently marked characters, it may not improbably prove to be a variety of the preceding.

4. *S. compositum* (Michx.): glabrous; stem virgate, nearly naked, glaucous; radical leaves broadly ovate, cordate, or reniform-cordate, on long petioles, angulate-toothed, sinuate-toothed, or deeply and irregularly pinnatifid, often ternately divided, the petiolulate divisions sinuate-pinnatifid or toothed, glabrous above, sparsely pubescent beneath when young, the margins minutely ciliate and scabrous; heads (small) numerous, in a spreading cymose-corymbose panicle; scales of the involucre glabrous, obtuse, the exterior oval, the others obovate or spatulate; rays 9–12; achenia obovate-orbicular, rather broadly winged, deeply and narrowly emarginated; the wing confluent with the acute or subulate teeth.

α. Michauxii: leaves deeply sinuate-pinnatifid, or sometimes ternately divided, the divisions (3–9) sinuate-lobed or toothed.—S. compositum, *Michx.! fl.* 2. *p.* 145; *Willd. spec.* 3. *p.* 2331; *Pursh, fl.* 2. *p.* 577; *Ell. sk.* 2. *p.* 462; *DC.! prodr.* 5. *p.* 512. S. laciniatum, *Walt. Car. p.* 217, not of *Linn.* S. sinuatum, *Herb. Banks.!* S. nudicaule, *Curtis! cat. Wilmingt. pl. in Bost. jour. nat. hist.* (1835) 1. *p.* 127. S. terebinthaceum *β.* sinuatum, *Curtis! mss.*

β. reniforme: leaves (larger) roundish or reniform-cordate, sinuate-toothed or angulate, or slightly lobed.—S. elatum, *Pursh, l. c.* (ex. descr.) S. terebinthinaceum, *Ell. sk.* 2. *p.* 463, not of *Linn.* S. reniforme, *Raf. med. fl.* 2. *p.* 283; *Nutt.! in trans. Amer. phil. soc. l. c. p.* 342.

γ. *ovatifolium:* leaves ovate, subcordate, unequally and doubly toothed. Dry pine barrens and open sandy woods, North Carolina! to Florida! the var. α. prevalent in the low country; β. more common towards the mountains. γ. Florida, *Mr. Croom! Dr. Chapman!* June–Aug.—Stem 2–6 feet high, slender, simple, paniculate or corymbose at the summit, with a few scattered bracts, or sometimes 3 or 4 small petiolate leaves towards the base. Leaves 4–8 inches long (in β. usually broader than long); the scattered hairs of the lower surface not arising from papillæ, as in S. terebinthinaceum. Heads much more numerous, more corymbose or rather cymose, and smaller than in the last named species. Scales of the involucre rather loose, slightly ciliate. Chaff of the receptacle with slightly dilated and hairy tips. Wing of the large orbicular achenia united with, or when old partly separating from, the subulate or aristate teeth.—This species, well-marked in habit and character, although polymorphous in foliage, is confined to the Southern Atlantic States; while S. terebinthinaceum, for which Elliott mistook the entire-leaved form, is almost exclusively a western plant. From long observation, Mr. Curtis is convinced that our α. and β. are only varieties of the same species, widely as their extreme forms differ in foliage; and our own observations confirm this view.

* * *Stem terete or obscurely angled, leafy: leaves undivided, alternate, opposite, or 3–4-nately verticillate, not unfrequently presenting all these variations in the same plant.*

5. *S. trifoliatum* (Linn.): stem smooth and glabrous, often glaucous; cauline leaves lanceolate, usually narrow, acute or acuminate, remotely denticulate, scabrous, especially the upper surface, on very short hispidly ciliate petioles, ternately or quaternately verticillate, the uppermost opposite; heads in a loose compound corymb or panicle; scales of the involucre ciliate, glabrous; the exterior ovate, rather acute; the interior broadly oval, obtuse; achenia obovate-oval; the rather broad wings produced at the summit into 2 acute triangular lobes, which are confluent with (when old often more or less separating from) the subulate teeth or awns.—*Linn. spec.* 2. *p.* 920 (excl. syn. *Moris.*); *Desf. cat.*; *Hook. bot. mag. t.* 3355. S. trifoliatum, ternatum, & atropurpureum, *Retz, in Willd. spec.* 3. *p.* 2333; *Pursh, l. c.*; *Ell. sk.* 2. *p.* 466. S. ternatum & S. trifoliatum (at least in part) *DC.! l. c.* S. ternifolium, *Michx.! fl.* 2. *p.* 146, chiefly. Chrysanthemum Virginianum, foliis asperis, &c., *Moris. hist. t.* 3, *f.* 68.—Varies with the leaves nearly all verticillate, or the upper opposite and alternate, entire, or irregularly serrate, lanceolate or ovate-lanceolate, scabrous or nearly smooth on both sides; the short petioles ciliate or glabrous; the stem sometimes pale, but commonly purple and glaucous.

Dry woods and plains, Ohio! Maryland! and throughout the mountainous portion of the Southern States! July–Oct.—Stem 4–6 feet high, striate, slightly angled. Leaves 4–6 inches long, frequently less than an inch broad. Heads rather small; the rays 12–18. The subulate awns of the achenia equalling or slightly exceeding the wings, with the edges of which they are confluent, but when mature they often break away.

6. *S. dentatum* (Ell.): stem usually smooth and glabrous, or hirsute-scabrous towards the summit; leaves lanceolate or ovate-lanceolate, acute, irregularly and coarsely toothed, scabrous above but scarcely so beneath; the upper alternate or scattered, somewhat petioled or sessile; the lower opposite or ternately verticillate, on rather slender hirsute-ciliate petioles; heads corymbose; scales of the involucre broadly ovate, obtuse, ciliate, glabrous; achenia broadly obovate, narrowly winged, obtusely emarginate at the summit, or almost truncate, the teeth obsolete.—*Ell.! sk.* 2. *p.* 468. S. trifoliatum, partly, *DC. l. c.?* S. affine, *M. A. Curtis! mss.*

β. lower leaves opposite; the upper alternate but approximate in pairs, on short petioles; all ovate-lanceolate and entire.

γ. stem somewhat hirsute or hispid; lower leaves opposite or alternate, petioled, coarsely sinuate-toothed or incised.—S. quercifolium, *DC.! prodr.* 5. *p.* 513. S. lanceolatum, *Nutt. in trans. Amer. phil. soc. l. c.*

Dry woods and fields, western part of N. Carolina, *Mr. Curtis!* to Georgia, *Elliott! Dr. Boykin!* and Alabama, *Mr. Buckley!* June–Sept.—Stem 2–5 feet high. Leaves 3–5 inches long, 1–1½ wide; the lower on petioles 1–3 inches long. Heads smaller than in S. Asteriscus. Rays 8–15. Achenia with narrow wings, which are very slightly produced at the apex, which is therefore broadly and slightly emarginate, minutely ciliate, sometimes with 2 minute callous rudiments of the awns or teeth.—This plant bears so much resemblance to the smoother forms of S. Asteriscus, varying also like that species with either glabrous or hispid stems, and with the leaves slightly, or very coarsely and sinuate-incisely toothed, that we can only distinguish them with certainty by the achenia; and hence we should have hesitated to consider it a distinct species, had not different states of it been so regarded by Elliott, De Candolle, Mr. Curtis, &c., apparently without reference to the achenia. We expect that this character will yet prove inconstant, and that all the varieties will be included under S. Asteriscus.

7. *S. Asteriscus* (Linn.): stem terete, hispid; leaves oblong or oval-lanceolate, irregularly and often coarsely serrate with scattered teeth, scabrous-hirsute both sides; the upper alternate and sessile; the lower mostly opposite, often ternately verticillate; the lowest on short hirsute petioles; heads solitary or somewhat corymbose; scales of the spreading involucre foliaceous, ciliate, the exterior hispid-scabrous, ovate, acutish, the inner large and obtuse; achenia obovate-oval; the rather broad wings projecting beyond the summit into 2 triangular acute lobes, united with the short subulate spreading teeth.—*Linn.! spec.* 2. *p.* 920; *Lam. ill. t.* 707; *Michx.! fl.* 2. *p.* 146; *Pursh, l. c.*; *Ell. sk.* 2. *p.* 469; *DC.! prodr.* 5. *p.* 513. Asteriscus Coronæ-Solis, &c., *Dill. Elth. t.* 37, *f.* 42.

β. lævicaule (DC.! l. c.): stem and sometimes the peduncles smooth and glabrous or nearly so; lower leaves elongated, often coarsely toothed or sinuate-incised, tapering into petioles.—S. scabrum, *Walt. Car. p.* 217. S. Asteriscus *β.* scabrum, *Nutt. gen.* 2. *p.* 183?

Dry sandy soil, Virginia! to Florida! and Louisiana! common. June–Aug.—Stem 2–4 feet high. Leaves very scabrous above, less so beneath, varying from broadly lanceolate-oblong to rather narrowly lanceolate, from nearly entire to very coarsely toothed. Heads large, with 12–15 elongated rays. Achenia moderately winged; the subulate teeth often breaking away more or less from the wing, sometimes projecting beyond it, but usually shorter.

8. *S. lævigatum* (Pursh? Ell.): smooth and glabrous; stem terete, slightly angled above; leaves coriaceous, opposite, lanceolate-oblong, acute or acuminate at both ends, remotely serrate-toothed, minutely hispid-ciliate; the lower tapering into margined petioles; the uppermost nearly sessile and obtuse or even slightly cordate at the base, often entire; heads (small) in a loose corymb; scales of the involucre ovate, ciliate, obtuse, squarrose; achenia oval-obovate, narrowly winged, emarginate and slightly toothed at the summit.—S. lævigatum, *Ell. sk.* 2. *p.* 465, not of *Pursh*, ex char., but probably the plant collected by Enslin.

Prairies &c. of the western part of Georgia (*Elliott*, &c.) and Alabama, *Mr. Buckley!* July–Sept.—Stem 2–3 feet high, stout. Leaves very smooth, except the margins; the lower 6–8 inches long and 2 in width; the uppermost much smaller. Resembles S. scaberrimum, except that it is smooth, with smaller heads; and the achenia not more than half the size, broadly emarginate, and with very narrow wings.—Pursh's character of S. lævigatum is most applicable to a common variety of S. integrifolium: yet the latter surely is not found in the low or middle country of Georgia (although there is some reason to suppose it a native of the western Alleghanies): but the plant may have been described from the mere summit of the stem of this species; for which, as it is certainly Elliott's plant, we have retained the name.

9. *S. scaberrimum* (Ell.): stem somewhat angled, hispid, nearly glabrous when old (sometimes smooth when young); leaves opposite, oval, acute or somewhat acuminate, rigid, hispid-scabrous on both sides; the uppermost nearly sessile and entire, the lower narrowed into petioles, denticulate or serrate; heads few; scales of the involucre strongly ciliate, squarrose-spreading, the exterior acutish; achenia (large) nearly orbicular, very broadly winged, narrowly cleft at the summit.—*Ell.! sk.* 2. *p.* 446.

β. very hispid, at least when young; leaves occasionally alternate; the uppermost sessile, the lower petioled; heads often solitary.

γ. hispid and scabrous; leaves oblong and lanceolate-ovate, opposite and alternate, nearly all sessile; heads somewhat panicled.—S. asperrimum, *Hook. compan. to bot. mag.* 1. *p.* 99. S. Radula, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 341.

Western districts of Georgia, *Elliott!* and Alabama, *Mr. Buckley!* *β.* & *γ.* Louisiana, (*Drummond*,) *Dr. Hale!* Arkansas, *Nuttall!* Texas, *Drummond!* Aug.–Sept.—Stem stout, 3–4 feet high. Leaves very rough; the hairs, particularly of the upper surface, arising from broad papillæ. Heads as large or larger than those of S. Asteriscus; the rays numerous. Mature achenia half an inch long, the wing also proportionally broad, often with a distinct callous tooth.—A distinct species, remarkable for its very rough leaves and large rounded achenia, although variable in its foliage, and allied to S. integrifolium.

10. *S. integrifolium* (Michx.): stem quadrangular and striate, scabrous; leaves rigid, numerous, opposite, lanceolate-ovate, with a subcordate sessile and partly clasping base, tapering to an acute point, entire, or sparingly denticulate, the upper surface and margins very scabrous, the lower closely scabrous-pubescent or often smooth; heads in a close 2–3-chotomous corymb; the lateral peduncles short; scales of the involucre rigid, scabrous, somewhat squarrose; the exterior ovate or ovate-lanceolate, acute; achenia (large) roundish oval or obovate, broadly winged, deeply emarginate and 2-toothed.—*Michx.! fl.* 2. *p.* 146; *Willd. spec.* 3. *p.* 2333; *Pursh! fl.* 2. *p.* 578; scarcely of *Elliott?*

β. læve: stem (striate-angled), lower surface of the leaves, and sometimes even the peduncles and involucre smooth.—S. lævigatum, *Pursh, l. c.?* S. speciosum, *Nutt.! in trans. Amer. phil. soc. l. c.*

Plains, &c. Wisconsin (*Mr. Lapham!*) Illinois! Missouri! and Arkansas! to the Western districts of Georgia. *β.* With var. *a.*; and Plains of Arkansas, *Nuttall!* Aug.–Sept.—Plant rigid, 2–4 feet high, simple or corymbosely branched and dichotomous. Leaves 3–4 inches long, sometimes a little narrowed below, but usually broadest at or near the closely sessile base, and tapering regularly to the apex. Heads as large as in S. Asteriscus; the rays 15–20. Achenia 4–5 lines long.—The plant varies greatly as to roughness in the same locality, and also when cultivated, the stem being sometimes strongly scabrous, but not unfrequently perfectly smooth: the leaves are usually very scabrous above and closely scabrous-pubescent beneath; but occasionally the lower surface is rough like the upper, and often entirely smooth. The species is well marked in habit.

* * * *Stem square, at least below: leaves all opposite, connate, either directly or by winged petioles.*

11. *S. perfoliatum* (Linn.): stem stout, square, the branches often nearly terete; leaves large, ovate or ovate-oblong, thin; the lower ovate-deltoid, coarsely toothed, on winged connate petioles; the upper often nearly entire, connate-perfoliate and forming a concave disk; heads trichotomous-corymbose, the central on a long peduncle; scales of the involucre ovate, obtuse, squarrose-spreading; achenia broadly obovate, winged, emarginate.—*Linn.! spec.* (*ed.* 2) 2. *p.* 1301; *Gouan, hort. Monsp. p.* 462; *Hook. bot. mag. t.* 3354. S. tetragonum & S. scabrum, *Mœnch.* S. connatum, *Michx.! fl.* 2. *p.* 146.—Varies with the stem, branches, involucre, &c. smooth and glabrous, the leaves somewhat scabrous (S. perfoliatum of authors); sometimes very scabrous above, and minutely and softly pubescent beneath; or with the stem hirsute or hispid, at least above, with deflexed hairs, and the leaves often hairy (S. connatum, *Linn. mant. p.* 574; *Willd. spec.* 3. *p.* 2332; *Pursh, fl.* 2. *p.* 578; *DC.! prodr.* 5. *p.* 514): a state with the exterior scales of the involucre larger and more foliaceous is S. conjunctum, *Willd. enum. p.* 933. As to the achenia, these are frequently obcordate-emarginate, the extremities of the wings being rounded and not at all produced (S. perfoliatum, *DC.! l. c.*); or these are produced into 2 short acute or triangular teeth (S. Hornemanni, *DC.! l. c.*, which, as to pubescence &c. is intermediate between S. perfoliatum & S. connatum of authors), or into sharp lobes producing a deep narrow notch, as is represented in *Schkuhr, handb. t.* 262. But all these forms are so variable as scarcely to admit of being distinguished as varieties, much less as species.

Banks of streams, &c. Michigan! Illinois! and Ohio! to Kentucky! Tennessee! and the mountainous portion of the Southern States! July–Sept.—Stem 4–6 feet high. Leaves 6–12 inches long, 4–8 broad; the radical somewhat cordate, on margined petioles; the upper connate either by a very broad or somewhat narrowed base; those of the branches sometimes disjoined. Heads large; the rays 15–30.—*Cup-Plant.*

S. erythrocaulon (Bernh. *in Spreng. syst.* 3. *p.* 630): "stem 4-angled, glabrous; leaves opposite, cordate-lanceolate, acute, unequally toothed, very scabrous; the winged petioles perfoliate; scales of the involucre oblong, rather acute," also seems to be a variety of S. perfoliatum.

74. BERLANDIERA. *DC. prodr.* 5. *p.* 517; *De Less. ic. sel.* 4. *t.* 26.

Species of Silphium, *DC. & authors.*

Heads many-flowered; the ray-flowers pistillate, ligulate, equal in number to the inner series of involucral scales (5–8, rarely 12), and situated in their axils; those of the disk tubular, sterile, partly enclosed by the somewhat foliaceous and cucullate upwardly dilated and obtuse chaffy scales of the receptacle, two of which are adherent to the base of each inner scale of the involucre and persistent, the others borne on the margin and depressed summit of the small somewhat turbinate receptacle; the central flowers occasionally somewhat abortive? and with narrower chaff. Scales of the spreading involucre foliaceous, in 3 series; the exterior 3–4, oblong or oval, smallest; the second 4 or 5, mostly obovate; the innermost (usually 5–8) largest, dilated-obovate or rhomboidal, membranaceo-chartaceous, reticulated.

Corolla of the ray with an oblong subsessile spreading ligule; of the disk cylindraceous, 5-toothed; the teeth hairy externally. Style in the sterile flowers undivided, elongated and hispid above. Achenia of the ray in a single series, flat, obcompressed, obovate, wingless, not toothed or notched at the summit, one-nerved on the outer, one-ridged and canescently pubescent on the inner surface, each more or less strongly coherent with the flat involucral scale to which it corresponds and falling away with it, partly covered by the chaff of the two attached sterile flowers; the pappus of 2 minute and caducous setose teeth or short awns: the abortive achenia of the disk linear or filiform, with an obscure coroniform pappus.—Perennial canescent or velvety-tomentose herbs or suffrutescent plants (natives of the Southern United States, Texas, and Northern Mexico), not resiniferous; with mostly solitary (middle-sized) pedunculate heads terminating the terete stem or paniculate-corymbose branches; the involucre and summit of the chaff usually canescently pubescent. Leaves alternate, cordate, ovate or oblong, and crenate, sinuate, or pinnatifid, thin, veiny. Rays yellow, pubescent externally. Corolla of the disk and anthers sprinkled with reddish resinous globules.

This genus, although well-marked in habit, is mainly distinguished from Silphium by its single series of wingless achenia, adherent to the large interior involucral scales; and, including as it does all the tomentose and canescent species of Silphium, it leaves that genus better defined in habit and character. It is singular that De Candolle, who founded the genus upon a Texan plant, and mentions its affinity on the one hand to Melampodium, and on the other to Polymnia, should not have remarked its closer alliance with Chrysogonum and especially with Silphium (from which the receptacle scarcely differs), nor have noticed the adhesion of the achenia to the scales; a character first pointed out by Mr. Bentham, in his B. lyrata of Mexico, but which occurs in all the species. As we find a corolla, stamens, &c. in all the disk-flowers, we suspect that De Candolle may have mistaken for abortive flowers some of the central abortive ovaries, from which the corolla falls at an early period. —Since our account of this genus was prepared, Mr. Nuttall, who had established a new genus upon these plants, adopted at our suggestion the name of Berlandiera, but with the appended sectional appellation of Silphiastrum. His B. longifolia, however, is doubtless the original B. Texana.

1. *B. Texana* (DC. ! l. c.): herbaceous (suffrutescent *DC.*); branches and peduncles hirsute with jointed often purplish hairs; leaves oblong-ovate, cordate, simply or doubly crenate, minutely hispid-scabrous above, canescently pubescent or hairy beneath; the lowermost petioled; the others closely sessile; heads somewhat corymbose.—B. longifolia, *Nutt. ! in trans. Amer. phil. soc. l. c. p.* 342.

β. betonicæfolia: leaves all petioled, cordate-ovate, deeply and coarsely crenate; peduncles clothed with jointed purplish hairs.—Silphium betonicifolium, *Hook. ! compan. to bot. mag.* 1. *p.* 99.

In woods, Texas, *Berlandier !* Western Louisiana, *Dr. Hale !* Western Arkansas, *Nuttall !* *β.* New Orleans? *Drummond.*—Most of the specimens from Dr. Hale (which do not appear suffruticose) have the peduncles and upper part of the stem clothed with purplish hairs (colored by the deposition of a resinous matter), just as Hooker describes his Silphium betonicifolium; but the upper leaves are all sessile, as in De Candolle's plant, inclining to lanceolate-ovate, an inch or an inch and a half in length; the uppermost often acute: but those at the base of the stem are about 4 inches long, obtuse, in form very like those of a Betonica, doubly and incisely crenate, on petioles about an inch long.

2. *B. tomentosa:* herbaceous, stem softly canescent with closely appressed woolly tomentum, simple or branched; leaves ovate or oblong-ovate, green and minutely pubescent above, white and finely tomentose beneath, crenate; the uppermost cordate and sessile; the lower ones petioled; heads in small corymbs, on slender peduncles.—Silphium tomentosum & pumilum, *Pursh, fl.* 2. *p.* 579. S. reticulatum, *Pursh, l. c.?* Polymnia Caroliniana, *Poir. dict.* 5. 7. 505.

α. stem erect or ascending, simple or sparingly branched; heads few on elongated naked pedicels; leaves mostly obtuse; the lower oblong, often acute and somewhat irregularly toothed at the base.—Silphium pumilum, *Michx.! fl.* 2. *p.* 146 (a dwarf state); *Ell.! sk.* 2. *p.* 469; *DC.! prodr.* 5. *p.* 512. Berlandiera tomentosa, *Nutt.! l. c.*

β. (*dealbata*) stem mostly branched, and, with the lower surface of the more numerous cordate-ovate often acutish leaves clothed with a very white fine tomentum; heads more numerous, corymbose, on shorter peduncles.—B. pumila, *Nutt.! l. c.*

γ. stem taller, branched, at length scarcely tomentose; upper surface of the leaves scabrous.

Dry pine barrens and plains; *α* Georgia! to Florida! *β.* Arkansas, *Nuttall!* Texas, *Drummond! γ.* Western Louisiana, *Dr. Leavenworth!* May–Aug.—Stem varying from scarcely a foot to 3 feet high. Leaves 1½–2, the lowest often 3–4 inches long, and 1 to 2 wide. Pedicels and involucre tomentose.—When old, the soft tomentum is more or less deciduous, and the stem often branched. The var. *γ.* is in this state, and approaches the preceding. The var. *β.* appears to be an exclusively Western plant, and is larger, more leafy, &c. If it prove a distinct species, it will require a new name, since both S. pumilum and S. tomentosum were founded on the species from the Atlantic States. We have adopted the latter of these specific names, because the plant, although small for a Silphium, is one of the largest of the genus to which we have removed it.

3. *B. incisa:* herbaceous, minutely velvety-canescent throughout; stem (short?) branching; leaves lanceolate-oblong, mostly petioled, coarsely and very irregularly incised and toothed, deeply sinuate and pinnatifid towards the base; the lobes and teeth short, obtuse; heads usually solitary terminating the branches, on elongated peduncles. Silphium Nuttallianum, *Torr.! in ann. lyc. New York,* 2. *p.* 216, as to the plant collected by Dr. James; but not the Florida plant of Nuttall.

On the Arkansas or Platte, *Dr. James!*—The specimen is only the upper portion of a stem, or perhaps a branch, clothed throughout with a very fine and close whitish velvety tomentum; but the upper surface of the leaves (2 inches or more in length) less canescent. Except that the stem is leafy, it considerably resembles B. lyrata, *Benth.! pl. Hartw.*, which is, however, quite distinct from this or the following species.

4. *B. subacaulis* (Nutt.): minutely strigose-canescent, at first acaulescent; leaves (radical) deeply sinuate-pinnatifid, often lyrate, somewhat petioled; the lobes toothed or crenate; peduncles (scapes) elongated, naked, bearing a single head.—B. subacaule, *Nutt.! l. c.* Silphium subacaule, *Nutt.! in Sill. jour.* 5. *p.* 301; *DC.! prodr.* 5. *p.* 512. S. Nuttallianum, *Torr.! l. c.* as to the syn.

β. stems short, at length branching, leafy below; radical leaves oblong; the cauline oblong-spatulate, somewhat petioled; all obtuse, lyrate, or sparingly sinuate, or nearly undivided; peduncles terminal, very long.

East Florida, *Mr. Ware!* (*Nuttall*), *Dr. Burrows! Dr. Leavenworth!* Georgia, *Le Conte! β.* Florida, *Dr. Leavenworth!* May–Aug.?—Radical leaves about 3 inches long, clustered, rather rough, particularly the upper surface, mostly alternately sinuate-pinnatifid, often with an oblong undivided terminal lobe. Scapes, or peduncles, slender, 6–8 inches long. Head as large as in B. tomentosa.

75. ENGELMANNIA. *Torr. & Gray, mss., in Nutt. trans. Amer. phil. soc. (n. ser.) 7. p.* 343.

Heads many-flowered; the ray-flowers equal in number to the inner scales of the involucre (8–10), and situated in their axils, ligulate, pistillate; those of the disk tubular, sterile. Scales of the involucre imbricated in about 3 series, coriaceo-chartaceous, broadly oval or obovate, appressed, the exterior shortest; all abruptly narrowed into a foliaceous lanceolate or linear spreading appendage, the exterior exceeding the scale itself in length. Receptacle flat; the chaff persistent, chartaceous, with foliaceous and hairy tips, partly involute and enclosing the sterile flowers; the outer series lanceolate, acute, two firmly adherent to the base of each inner involucral scale; the others very narrowly linear, rather obtuse. Corolla of the ray with an oblong exserted sessile ligule; of the disk dilated upwards, 5-toothed, the teeth somewhat hairy. Style in the sterile flowers undivided, hispid. Achenia of the ray equal in size to the concave inner involucral scales to which they are applied, oval-obovate, obcompressed, convex and carinate externally, flat or concave and one-ridged on the inside, scabrous-pubescent, not winged or toothed, crowned with two small scarious lanceolate concave marcescent squamellæ, which are more or less united at the base, hispid and fringed; those of the disk filiform, abortive, with a minute coroniform pappus.—A perennial branching rough and hirsute herb, with branching stems, corymbose-paniculate at the summit, and bearing several rather small heads on slender peduncles. Leaves alternate, strigose, oblong or ovate-lanceolate, irregularly pinnatifid, with the segments lanceolate or linear (the lower longest and divaricate), sessile; the radical petioled and bipinnatifid. Rays yellow, tardily deciduous, pubescent externally.

E. pinnatifida (Torr. & Gray, l. c.)—Silphium, n. sp. (*Nutt.*) *Torr. in ann. lyc. New York*, 2. *p.* 215.

On the Canadian, *Dr. James!* Red River, Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!*—Plant 1–3 feet high. Leaves 2–5 inches long. Heads about as large as in Polymnia Canadensis: the involucre subglobose. The base of the achenia coheres with the base of the involucral and the two adjacent chaffy scales, but at length it separates without tearing away the margin: the exterior coat (calyx-tube) is separable.—This genus, intermediate between Silphium and Parthenium, is dedicated to our esteemed correspondent, Dr. George Engelmann, of St. Louis, Missouri, who has for several years assiduously studied the plants of Missouri, Arkansas, &c., and made valuable contributions to many European collections, as well as to this work.

Div. 4. PARTHENIEÆ, *DC.*—Fertile and sterile flowers in the same heads; the former (several) ligulate, the rays persistent or marcescent; the latter central, tubular. Fertile achenia obcompressed, not corticate or winged, usually with a callous margin. Pappus none, or 2-squamellate. Anthers scarcely united.

76. PARTHENIUM. *Linn.; Gærtn. fr. t.* 168*; DC. prodr.* 5. *p.* 531.

Heads many-flowered; the ray-flowers 5, pistillate, fertile, somewhat obscurely ligulate, one in the axil of each inner scale of the involucre; those of the disk tubular, sterile by the abortion of the style. Involucre hemispherical, in a double series; the exterior ovate; the interior nearly orbicular. Receptacle conical or somewhat cylindrical, covered with membranaceous chaffy scales, which are dilated above and somewhat cucullate, partly sheathing the flowers of the disk, tomentose at the summit. Corolla of the ray very short, obcordate, persistent or marcescent; of the disk tubular, somewhat dilated above. Stamens inserted towards the base of the corolla: anthers slightly united. Style of the sterile flowers undivided: the branches of the fertile style semiterete, obtuse. Achenia (of the ray) compressed, oval or obovate, smooth, surrounded by a filiform callous margin, which is firmly coherent at the base with the involucral scale and with a contiguous chaffy scale of the receptacle on each side, at length tearing away from the achenium. Pappus 2-squamellate, or somewhat aristate, sometimes nearly obsolete.—Herbs or suffrutescent (American) plants, somewhat various in habit, canescent or hirsute-scabrous, with alternate undivided or 1–2-pinnately cleft leaves. Heads corymbose-cymose or panicled, rarely solitary. Flowers whitish.

§ 1. *Pappus of* 2 *very small and slender or awn-like squamellæ, sometimes obsolete: perennial or suffrutescent: leaves toothed or somewhat incised, undivided.*—PARTHENIASTRUM, Dill., DC.

1. *P. integrifolium* (Linn.): stem herbaceous, hirsute-pubescent; leaves hispid-scabrous, ovate-oblong or lanceolate-oblong, doubly crenate or crenate-toothed, or sometimes incised; the upper ones sessile or partly clasping; the lower petioled, often deeply incised at the base; heads numerous, tomentose, corymbed; exterior scales of the involucre somewhat acute.—*Linn.! spec.* 2. *p.* 988; *Lam. ill. t.* 766; *Michx.! fl.* 2. *p.* 147; *Willd. hort. Berol. t.* 4; *Schkuhr, handb. t.* 293; *Nutt. gen.* 2. *p.* 183; *Ell.! sk.* 2. *p.* 474; *DC. l. c.* Partheniastrum Helenii folio, *Dill. Elth. t.* 225, *f.* 292. Ptarmica Virginiana &c., *Pluk. alm. t.* 53, *f.* 5, *&* 219, *f.* 1.

Dry soil, Maryland! Virginia! to Alabama! and west to Missouri! Louisiana! and Texas! July–Sept.—Stem 1–2 feet high. Lower leaves 3–5 inches long. Heads crowded, about 4 lines in diameter; the scales closely appressed. Ray inconspicuous.

§ 2. *Pappus of* 2 *oblong obtuse membranaceous squamellæ: root annual: leaves bipinnatifid.*—ARGYROCHÆTA, Cav., DC.

2. *P. Hysterophorus* (Linn.): hirsute-puberulent and somewhat canescent, diffusely branched or decumbent; leaves variously bipinnatifid; the uppermost linear and undivided; heads (very small) paniculate; exterior scales of the involucre somewhat acute.—*Linn. l. c.; bot. mag. t.* 2275; *Hook. in compan. to bot. mag.* 1. *p.* 99; *DC.! l. c.* Argyrochæta bipinnatifida, *Cav. ic.* 4. *p.* 54, *t.* 378. Villanova bipinnatifida, *Ort. dec. p.* 48, *t.* 6.

Banks of streams, New Orleans, *Drummond, Dr. Ingalls!* Texas, *Berlandier!* St. Augustine, Florida, *Baldwin!* Key West, *Mr. Blodgett!*

Also a native of Mexico and the West Indies.—Leaves resembling those of Ambrosia artimesiæfolia.

§ 3. *Pappus of* 2 *oblong-lanceolate membranaceous squamellæ, nearly the length of the short truncate tubular corolla: cæspitose, dwarf: heads solitary and nearly sessile among the spatulate-linear canescent leaves at the summit of each division of the ligneous caudex !*—BOLOPHYTA, Nutt.

3. *P. alpinum:* acaulescent; caudex branched, densely cæspitose, and crowned with the vestiges of former leaves and with a tuft of white hairs; leaves densely tufted, entire, silvery-canescent; corolla of the ray scarcely exserted, truncate, slightly 2-crenulate.—Bolophyta alpina, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 347.

In the Rocky Mountains, towards the sources of the Platte, in about lat. 42°, on shelving rocks at the summit of a lofty hill, near the place called the 'Three Butes' by the Canadians, 7000 feet above the level of the sea. *Nuttall!* June.—Caudex fusiform, sending off several closely matted crowns of leaves; the latter an inch or an inch and a half in length, scarcely a line wide, tapering into short petioles, 1-nerved. Heads concealed among the leaves, about as large as those of P. integrifolium, and entirely similar in structure; except that the rays, if they may be so called, are shorter, entirely tubular, with an obscure emargination anteriorly and posteriorly. The pappus, which escaped Mr. Nuttall's notice, consists of a scarious ovate-lanceolate or triangular scale-like auricle or tooth on each side, which perhaps withers away as the achenium ripens. Excepting the habit, therefore, we find nothing whatever to distinguish this little plant from Parthenium, beyond the more reduced corolla of the ray.

Div. 5. IVEÆ, *DC.*—Fertile and sterile flowers in the same heads, all tubular, or the former rarely apetalous. Pappus coroniform, 4-awned, or none. Anthers approximate but distinct: filaments inserted towards the base of the corolla. Style of the fertile flowers mostly 2-parted.

77. CYCLACHÆNA. *Fresenius, ind. sem. hort. Franc.* 1836, *p.* 4, *& in Linnæa,* 12, *suppl. p.* 78.

(Polygamo-subdiœcious; the barren plant similar to the fertile, but not fertilizing its ovaries.) Fertile and sterile flowers in the same heads; the former 5, in the axils of the inner scales of the involucre, with no corolla or a mere rudiment; the latter 10–15, with an obconical 5-toothed corolla, (nearly destitute of proper tube); the central ones abortive. Scales of the flattish hemispherical involucre usually 10, in 2 series; the exterior 5, ovate, somewhat acuminate, thickish, herbaceous; the interior dilated-obovate, truncate, membranaceous, at length loosely wrapped around the achenia. Receptacle small, flat; the chaff linear-spatulate, usually wanting towards the centre. Anthers slightly united, tipped with an inflexed mucronate appendage. Style of the fertile flowers deeply 2-cleft, linear, acutish; in the sterile flowers undivided, radiate-penicillate at the apex. Achenia obovate, obcompressed, somewhat turgid, not margined, glabrous, entirely destitute of pappus; the staminate flowers with no rudiments of ovaries.—A tall and coarse upper ones alternate.

annual; the stem simple and more or less branched at the summit; the leaves opposite, ovate or subcordate, acuminate, doubly or unequally serrate, 3-nerved, hirsute-canescent or pubescent beneath, somewhat scabrous, on long petioles. Heads small, greenish, ebracteate, sessile and often glomerate, disposed in compound terminal and axillary spikes, forming a pyramidal panicle.

C. xanthiifolia (Fresenius, l. c.)—Iva xanthifolia, *Nutt.! gen.* 2. *p.* 185. I. (Picrotus) xanthifolia & paniculata, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 347.

In alluvial soil, Upper Missouri near Fort Mandan &c., *Nuttall! Prince Neu-wied* (seeds from which the plant was raised in the Frankfort Botanic Garden) to the Rocky Mountains, *Nuttall!*—Scales of the involucre somewhat hairy externally and ciliate, distinct, as long as the disk. Ovaries minutely somewhat hairy at the summit when young, at length glabrous; the corolla reduced to a minute ring surrounding the base of the style.—We are not sure that the plant is truly polygamo-diœcious, since the styles, in what Mr. Nuttall considers the sterile plant, are apparently perfect: the fertile ovaries of Iva ciliata are at first very small likewise: but in this plant the inner involucral scales are also proportionally reduced in size, so as to be readily overlooked, as indeed they have been by Mr. Nuttall. We have a specimen from a plant cultivated in Mr. Lambert's garden, exhibiting the heads in a somewhat monstrous state; the styles of the fertile flowers frequently 3 or 4, and those of the exterior sterile 2-cleft; the former showing an evident corolla; the corolla of the disk-flowers 10-nerved; the receptacle towards the margin furnished with dilated and somewhat cucullate chaff; while in the wild plant the chaff is often nearly or quite wanting.—Excepting its entire opposite leaves, this plant has the habit as well as the inflorescence and many of the characters of Euphrosyne, *DC.* (*DeLess. ic.* 4. *t.* 28); of which, indeed, it might be deemed a section, should that genus prove to have an inner series of involucral scales, similar to that which is represented in the figure as one of the paleæ of the receptacle.

78. IVA. *Linn.*; *Gærtn. fr. t.* 164; *DC. prodr.* 5. *p.* 529.

Fertile and sterile flowers in the same heads; the former few (1–5), marginal, with a small tubular corolla; the latter several (7–20, rarely only 2 or 3), with a tubular-campanulate or infundibuliform 5-toothed corolla. Scales of the campanulate or hemispherical involucre 3–5 in a single series, and often more or less united, or 6–9 and imbricated, usually ovate or orbicular and somewhat fleshy. Receptacle small, chaffy; the chaff linear or spatulate. Anthers sometimes with a mucronate inflexed appendage, distinct or nearly so. Style in the fertile flowers deeply 2-cleft; the branches linear or linear-subulate, one of them often imperfect; in the sterile flowers undivided, usually with the apex radiate-penicillate. Achenia obovoid, somewhat obcompressed, wholly destitute of pappus; the sterile flowers with rudimentary ovaries.—Herbaceous or shrubby commonly maritime (American) plants. Leaves opposite or the upper alternate, often thick or fleshy, 1–3-nerved. Heads solitary or ternate in the axils of the upper leaves, or of foliaceous bracts, forming spikes or spicate racemes, deflexed. Corolla greenish-white. Anthers yellow.

§ 1. *Involucre several-flowered, composed of 3–5 distinct and nearly* 1-*seriate, or partly united scales.*

1. *I. ciliata* (Willd.): annual, hirsute or hispid, branched; leaves opposite, on slender hispid or ciliate petioles, ovate, acuminate, coarsely and irregularly serrate-toothed, scabrous above, softly pubescent or slightly canescent beneath; the upper ones ovate-lanceolate; spikes dense, elongated, paniculate; the conspicuous lanceolate or ovate-lanceolate bracts, and the (3–4, distinct) roundish unequal scales of the involucre, hispidly ciliate; fertile flowers mostly 3; chaff of the receptacle linear-filiform.—*Willd. spec.* 3. *p.* 2386; *Pursh, fl.* 2. *p.* 580; *DC. l. c.* I. annua, *Michx.! fl.* 2. *p.* 184, not of *Linn.* Ambrosia (vel Iva) Pitcheri, *Torr.! mss.* (*in herb. Hook.*); *Hook. compan. to bot. mag.* 1. *p.* 99.

β. bracts linear and much elongated, ciliate only near the base.—Ambrosia Pitcheri *β.*, *Hook. l. c.*

Swamps and moist places, Illinois! and Missouri! to Louisiana! Arkansas! and Texas! common. Aug.–Oct.—Plant 2–6 feet high, coarse and weed-like in appearance, with much the habit of an Ambrosia. Leaves 3–4 inches long. Spikes 3–6 inches long, numerous; the bracts longer (in *β.* many times longer) than the deflexed almost sessile heads. Scales of the involucre 3, rarely 4 or 5, very obtuse, unequal. Fertile flowers sometimes 4 or 5, inconspicuous when young; the corolla slender, truncate. Achenia obovate, lenticular. Sterile flowers 10–15, greenish; the style penicillate at the apex.

2. *I. frutescens* (Linn.): shrubby, nearly glabrous, much branched; leaves opposite or the upper ones alternate, a little fleshy, oval or lanceolate, somewhat scabrous, coarsely and sharply serrate; the uppermost, or bracts, linear-lanceolate, entire; heads depressed-globose, somewhat pedicellate, solitary or in pairs in the axils of the bracteal leaves, forming foliaceous paniculate racemes; scales of the involucre 5, orbicular, glabrous, distinct; fertile flowers 5; chaff of the receptacle linear-filiform.—*Linn.! amœn. acad.* 3. *p.* 25, *& spec.* 2. *p.* 989; *Walt.! Car. p.* 232; *Lam. ill. t.* 166. *f.* 2; *Michx.! fl.* 2. *p.* 184; *Willd. l. c.*; *Pursh! fl.* 2. *p.* 580; *Ell. sk.* 2. *p.* 475; *Bigel. fl. Bost. ed.* 2. *p.* 317; *DC.! l. c.*

Sea-coast, and muddy shores of large rivers near the ocean, Massachusetts! to Florida! and Louisiana; common. July–Sept.—Shrub 3–8 feet high; the stems annually dying down to near the ground in the Northern States. Leaves of a greyish hue, sometimes ternate. Heads recurved, greenish. Corolla of the fertile flowers very small, 2–3-toothed. Achenia when young sprinkled with resinous dots as in most other species.—*Marsh Elder.*

3. *I. axillaris* (Pursh): much branched from the somewhat ligneous base, low, covered with minute appressed hairs or nearly glabrous; leaves alternate or the lower opposite, fleshy, lanceolate-linear, oblanceolate, or spatulate-oblong, entire, obscurely 1–3-nerved, narrowed at the base, sessile; heads solitary in the axils of the leaves, on short recurved pedicels; scales of the campanulate involucre 4–5, distinct, or united to the middle; fertile flowers 4–5; chaff of the receptacle filiform-linear.—*Pursh! fl.* (*suppl.*) 2. *p.* 743; *Nutt.! gen.* 2. *p.* 185; *Hook.! fl. Bor.-Am.* 1. *p.* 309, *t.* 106. I. axillaris & I. foliolosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 346.

Dry sandy and saline soil, Upper Missouri, *Bradbury! Nuttall! Mr. Nicollet!* Saskatchawan, *Drummond!* &c. and on the Oregon from the Rocky Mountains to the Grand Rapids, *Douglas!* May–July.—Root annual according to Pursh and Hooker, 'perennial & herbaceous,' *Nuttall*, certainly perennial or even ligneous in the fine specimens collected by Mr. Nicollet. Stems ascending, a span to a foot high; the plant with much the habit of Glaux maritima. Leaves about an inch long, varying from 2 lines to half an inch in breadth, pale; the close strigose pubescence (traces of which are almost always visible with a lens) scarcely perceptible to the naked eye except on the margins. The involucral scales are sometimes nearly or quite distinct (I. axillaris, *Nutt. l. c.* excluding the reference to Hooker); sometimes variably united, as described and figured by Hooker, when it is the I. foliolosa, *Nutt. l. c.* But Mr. Nicollet's specimens from the Missouri (in which the leaves are as evidently 3-nerved and hairy as in any state of the species,) have the scales in some instances united to the middle, while more commonly they are nearly distinct.

4. *I. microcephala* (Nutt.): stem slender, glabrous, virgately branched; heads very small, nearly sessile in the axils of the narrowly linear and fleshy sessile entire alternate leaves, nodding; scales of the involucre 4–5, distinct; flowers about 6, three of them pistillate.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Florida, *Dr. Baldwin!*—Leaves about half an inch long and half a line wide: the capitula not larger than an ordinary pin's head. *Nutt.*

§ 2. *Scales of the many-flowered involucre 6–9, imbricated in 2–4 series.*

5. *I. imbricata* (Walt.): perennial, herbaceous or nearly so, mostly glabrous; branches ascending; leaves commonly alternate, fleshy, lanceolate, mucronulate, tapering to the base, sessile, obscurely 3-nerved, entire or denticulate serrate; heads solitary or in pairs in the axils of the upper leaves, on short pedicels, forming foliaceous spikes or racemes; exterior scales of the involucre orbicular, fleshy, with a narrow scarious margin; the interior obovate, the scarious margin lacerate-denticulate; fertile flowers 2–4; chaff of the receptacle linear-spatulate, denticulate at the summit.—*Walt.! Car. p. 232; Michx.! fl. 2. p. 184; Pursh! fl. 2. p. 580; Ell.! sk. 2. p. 475; DC.! prodr. 5. p. 530.*

Sandy sea-shore, N. Carolina! to Florida! and Louisiana! Also Key West, *Mr. Blodgett!* July–Oct.—Plant 1–2 feet high, suffrutescent at the base. Leaves about an inch long. Corolla of the fertile flowers very small and short, 5-parted or irregularly cleft. Fertile style divided nearly or quite to the base; the branches linear, rather obtuse, one of them sometimes abortive. Sterile flowers numerous. Achenia slightly compressed.—"Leaves of the fertile branches linear; of the barren ones cuneate-obovate and serrate-toothed: the plant has an extremely strong odor of honey." *M. A. Curtis, mss.*

§ 3. *Involucre turbinate, composed of 3 scales united nearly to the summit, 3–6-flowered, the fertile flowers solitary.*—Monachæna.

6. *I. angustifolia* (Nutt.): annual, strigose-pubescent: stem erect or decumbent at the base, much branched; leaves narrowly linear or lanceolate-linear, 1–3-nerved, tapering at the base or somewhat petioled, entire, the lower often denticulate; heads (small) subsessile, deflexed, forming narrow virgate leafy spikes; chaff of the receptacle filiform, minute.—*Nutt.! in DC. prodr. 5. p. 529, & in trans. Amer. phil. soc. l. c.*

Prairies, Arkansas, *Nuttall! Dr. Leavenworth!* Western Louisiana, *Dr. Hale!* Texas, *Drummond! Dr. Leavenworth!* Aug.–Sept.—Stem 1–3 feet high. Leaves &c. minutely pubescent and somewhat canescent with appressed strigose hairs; the lower 1–2 inches long and 1–3 lines wide; the upper much narrower; the bracteal ones almost setaceous. Spikes very numerous, 4–6 inches long. Heads scarcely more than a line in length, frequently with only 3 flowers, two of them staminate. Sterile style abortive, short, glabrous, not thickened at the summit. Achenium somewhat compressed.

79. PICROTHAMNUS. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 417.

Fertile and sterile flowers in the same heads; the former 3–5, marginal, with a very small obliquely truncate and obscurely 2–3-toothed corolla; the latter about 10, with an infundibuliform 5-toothed corolla, inflated at the summit. Scales of the depressed-hemispherical involucre about 5, orbicular, distinct. Receptacle flat, naked. Sterile flowers destitute of ovaries; the anthers slightly united, tipped with an inflexed mucronate appendage; the abortive style entire, with a radiate-penicillate summit. Style in the fertile flowers deeply 2-cleft; the branches subulate-linear, glabrous. Achenia obovoid-oblong, terete, entirely clothed, as well as their corollas, and the tube of the sterile corolla, with very long and tortuous woolly hairs.—A low rigid suffruticose plant, with the habit of Artemisia, canescently pubescent, much branched; the branches spinescent. Leaves small, alternate or crowded, petioled, pedately or 2-ternately divided. Heads small, in short and somewhat loose racemes or spikes; the rachis persistent and spinescent. Flowers pale yellow.

P. desertorum (Nutt.! l. c.)
Arid deserts in the Rocky Mountains, towards the north sources of the Platte, *Nuttall!*—Plant bitter to the taste (whence the name), 4–18 inches high.—Mr. Nuttall doubtfully refers it to Millerieæ, next to Clibadium: but the heads and flowers entirely accord with Iva, except in the naked receptacle, and the woolly hairs of the achenia and corolla.

Div. 5. AMBROSIEÆ, *DC.*—Fertile and sterile flowers in different heads on the same individual; the former (1–4) often apetalous; the latter tubular. Scales of the involucre in the fertile heads united into an ovate or oblong persistent covering, including or closely investing the flowers and fruit, often prickly or spinose. Pappus none. Anthers approximate, but distinct or very slightly united: filaments inserted at the base of the corolla.

80. AMBROSIA. *Tourn.; Linn.; Gærtn. fr. t.* 164; *Schkuhr, handb. t.* 292; *DC. prodr.* 5. *p.* 524.

Sterile heads occupying the upper portion, the fertile at the base of the racemes or spikes, or in the axils of the upper leaves. STERILE FL. Involucre flattish, hemispherical, or somewhat turbinate, composed of 7–12 united scales, 5–20-flowered. Receptacle flattish, naked, or usually with filiform chaff among the flowers. Corolla infundibuliform or turbinate, 5-toothed. Anthers tipped with a mucronate-setigerous inflexed appendage. Ovary none or rudimentary: abortive style included, minutely fimbriate or radiate-penicillate at the summit. FERTILE FL. Involucre globose-ovoid, oblong, or turbinate, closed, pointed, usually armed near the summit with 4–8 tubercles or horns in a single series, 1-flowered. Corolla none. Stamens none. Branches of the style filiform, elongated. Achenium ovoid or obovoid.—Herbaceous or rarely suffrutescent weed-like plants (chiefly American), with opposite or alternate mostly lobed leaves. Branches terminating in racemes or spikes, which are simple and sterile above. Sterile heads ebracteate. Fertile heads clustered at the base of the sterile spikes and bracteate, or sessile in the axils of the upper leaves. Corolla whitish.

Lessing, De Candolle &c. distinguish Franseria from Ambrosia by the chaffy receptacle of the sterile flowers, the presence of an abortive style, and the echinate fertile involucre as in Xanthium, which moreover in Franseria proper (§ Xanthiopsis, *DC.*) is said to be 2–4-celled: but that genus must depend upon the latter characters alone (at least so far as the section Centrolæna is concerned, of which only we have seen specimens); for all the species of Ambrosia we have examined have a sterile style, and all but A. trifida and A. artemisiæfolia exhibit the same chaffy receptacle as in Franseria. In the Mexican A. fruticosa *var.* canescens, *Benth. pl. Hartw.*, the chaffy scales are conspicuously dilated at the summit. No one appears to have remarked the setiform inflexed appendage of the anthers in these plants.—A. bidentata, *Michx.* might perhaps be properly separated from the genus.

§ 1. *Sterile heads more or less pedicellate; the involucre regular, with the margin crenate or nearly entire: fruit (fertile involucre) subglobose or obovoid.*—EUAMBROSIA.

* *Involucre of the sterile heads 3-ribbed: receptacle naked: fertile heads glomerate at the base of the sterile spiciform racemes; the clusters somewhat involucrate: leaves opposite, undivided or palmately 3–5-lobed.*

1. *A. trifida* (Linn.): stem tall and stout, hairy, rough; leaves scabrous and hairy, deeply 3-lobed; the lobes oval-lanceolate, acuminate, serrate; the lower leaves often 5-lobed; petioles narrowly winged, ciliate; racemes often paniculate; fruit (fertile involucre) turbinate-obovoid, with a short conical pointed apex, 6-ribbed, the ribs terminating in as many cristate tubercles.—*Linn.! spec.* 2. *p.* 987; *Michx.! fl.* 2. *p.* 183; *Willd.! spec.* 4. *p.* 375; *Pursh, fl.* 2. *p.* 581; *Ell.! sk.* 2. *p.* 476; *DC.! prodr.* 5. *p.* 527; *Darlingt. fl. Cest. p.* 479; *Hook. fl. Bor.-Am.* 2. *p.* 26. A. Virginiana &c., *Moris. hist.* 3. *sect.* 6. *t.* 1, *f.* 4.

β. integrifolia: leaves ovate or oval-oblong, acuminate, sometimes the upper, and often the lower ones 3-lobed.—A. integrifolia, *Muhl. in Willd.! l. c.*; *Pursh, fl.* 2. *p.* 580; *DC. l. c.*

Low grounds and along streams, Canada! to Georgia! and west to Louisiana and Arkansas! Aug.–Sept.—① Stem 4-sided, 4–9 feet high (sometimes 20 feet or more! according to Dr. Boykin), branching above. Leaves large. Involucre of the sterile heads with 3 strong dark purple radiate ribs, occupying the side farthest from the axis of the raceme. Corolla greenish-white, cyathiform-campanulate, scarcely attenuate at the base. Fruit 3–4 lines long.—A coarse unsightly plant.

* * *Involucre of the sterile heads not ribbed: receptacle usually chaffy; the chaff filiform, or rarely dilated at the summit, rather shorter than the corolla: fertile heads solitary or glomerate towards the base of the sterile spikes or racemes, or in the axils of the upper leaves; the clusters somewhat involucrate: leaves 1–2-pinnately cleft or parted, alternate, the lower opposite.*

2. *A. crithmifolia* (DC.): suffruticose and prostrate at the base; the flow-

ering stems erect or ascending, velvety-hirsute at the summit; leaves nearly all opposite, petioled, rather thick, bipinnatifid, when young hirsute-tomentose on both sides; spikes few, the terminal one much longest; receptacle of the sterile flowers chaffy; fruit (fertile involucre) obovoid, villous when young, unarmed.—*DC.! prodr.* 5. *p.* 525.

Sea-shore, Key West, *Mr. Bennett! Mr. Blodgett!*—Whole plant somewhat hirsute-canescent, 12–15 inches high. Lower leaves bipinnatifid; the ultimate segments short; the uppermost occasionally alternate, often simply pinnatifid; the segments linear, entire or 1–2-toothed. Fertile involucre with about 4 obscure inflexed teeth near the summit.

3. *A. artemisiæfolia* (Linn.): annual; stem sparsely or rather densely villous, or pubescent, paniculately branched; leaves bipinnatifid, minutely strigose-pubescent, almost glabrous above, paler and frequently somewhat canescent beneath; the uppermost simply pinnatifid; the lower opposite; petioles ciliate or hirsute; racemes spicate, paniculate; receptacle of the sterile flowers naked; fertile heads solitary or glomerate along the lower part of the racemes and bracteate, or in the axils of the upper leaves; fruit obovoid or subglobose, nearly glabrous, pointed, armed with about 6 short acute spines or teeth.—*Linn.! spec.* 2. *p.* 988; *Lam. ill. t.* 765, *f.* 1; *Willd.! spec.* 4. *p.* 376; *Ell. sk.* 2. *p.* 477; *DC.! prodr.* 5. *p.* 526. A. elatior, *Linn.! l. c.; Willd.! l. c.; Pursh! fl.* 2. *p.* 581; *Ell. l. c.; Bigel. fl. Bost. ed.* 2. *p.* 343; *Hook.! fl. Bor.-Am.* 1. *p.* 309; *Darlingt. fl. Cest. p.* 479; *DC.! l. c.* A. absynthifolia, *Michx.! fl.* 2. *p.* 183.

β. cauline leaves 1–2-pinnatifid; those of the branches nearly sessile; the uppermost lanceolate, undivided, or somewhat lobed at the base.—A. heterophylla, *Muhl. in Willd.! spec.* 4. *p.* 378; *Pursh, l. c.; DC. l. c.*

γ. fertile heads glomerate in the axils of the leaves and on short axillary branchlets or spikes, and more or less racemose or paniculate; the sterile racemes very short.

δ. less pubescent; fruit (usually rather smaller) with the spines or teeth very short or obsolete.—A. paniculata, *Michx.! fl.* 2. *p.* 183; *Willd.! l. c.; Ell. l. c.; DC.! l. c.; Hook. l. c.* partly? Iva monophylla, *Walt.! Car. p.* 232.

Dry fields and pastures, roadsides, and waste places, Canada! to Florida! Louisiana! and Texas! often a troublesome weed in cultivated grounds. (California, ex *Hook. & Arn. bot. Beechey.*) July–Sept.—Stem 1–3 or 4 feet high, at length much branched; the plant variable as to pubescence, &c. Fruit a line to a line and a half in length; the spines or teeth certainly variable, and sometimes inconspicuous or almost none.—Of the two Linnæan names, the one we have preferred is the most appropriate.—*Bitter-weed. Rag-weed. Hog-weed.*

4. *A. coronopifolia:* annual? canescent-strigose, at length much branched, leaves crowded, rigid; the upper lanceolate or oblong-lanceolate, sessile; deeply and somewhat remotely pinnatifid or incised; the lower opposite and somewhat bipinnatifid, on short margined petioles; sterile heads in loose spicate racemes, the receptacle chaffy; fertile heads solitary or somewhat clustered at the base of the sterile spikes and in the axils of the upper leaves; fruit globose-ovoid, turgid, unarmed, obtusely pointed, hairy.—A. hispida, *Torr.! in ann. lyc. New York,* 2. *p.* 216, doubtless not of *Pursh.* 4

Prairies of Illinois! Missouri, (north to Devil's Lake, *Mr. Nicollet!*) Louisiana! and Texas! Aug.–Sept.—Stem erect, 1–5 feet high, often rough or almost hispid. Leaves very numerous, sometimes nearly all opposite, 2–5 inches long, clothed with very closely appressed hairs, both sides more or less canescent when young, sprinkled with minute resinous globules; the segments rather distant, spreading, oblong or lanceolate. Sterile racemes or spikes proportionally shorter than in the preceding; the heads scarcely larger: involucre minutely hispid. Chaff of the receptacle filiform. Mature fruit twice as large as in A. artemisiæfolia, pubescent towards the summit, obscurely triangular at the base, entirely destitute of teeth or horns.

5. *A. longistylis* (Nutt.): annual, scabrous; stem (apparently) simple; leaves pinnatifid; the segments oblong-linear; bracts entire; fertile flowers axillary, conglomerate, with exceedingly long styles; fruit cornute, spiny at the summit; sterile flowers about 30, in a slightly toothed involucre; the receptacle filiformly paleaceous; cusps of the anthers filiform. *Nutt.! in trans. Amer. phil. soc. l. c. p.* 344.
Rocky Mountains: allied to Franseria, *Nuttall!*—Plant strigose-hispid.

§ 2. *Sterile heads closely sessile, densely aggregated in a cylindrical sessile spike terminating the stem or branches; the involucre turbinate, truncate, the inner margin produced into a long and conspicuous lanceolate, hispid, decurved or cucullate tooth or appendage: receptacle chaffy: fruit* (*fertile involucre*) *oblong,* 4-*angled and somewhat prismatic, solitary or clustered in the axils of the lanceolate closely sessile* 1-*nerved leaves.*—CERCOMERIS.

6. *A. bidentata* (Michx.): annual; stem hirsute with spreading hairs; the branches simple; leaves very numerous, mostly alternate, hirsute or hispid, partly clasping, commonly with a short spreading lobe or broad tooth on each side near the base, entire above, or rarely remotely serrate, acute; sterile spike squarrose with the recurved very hispid appendage of the involucres; receptacle small, about 10-flowered; the filiform scarious chaff much shorter than the corolla; fruit acutely pointed; the 4 angles or ribs terminating in short acute spines.—*Michx.! fl.* 2. *p.* 182: *Pursh, fl.* 2. *p.* 581.
Prairies of Illinois! Missouri! Arkansas! and Louisiana! July–Sept.—Stem 1–3 feet high. Leaves 1–2 inches long. Sterile spikes very dense; the appendages of the involucres, which are twice or thrice the length of the involucre itself appearing like recurved bracts. Fertile heads numerous, minutely pubescent, when mature about 4 lines long, including the rigid and sharp terminal horn or cusp. Achenium conformed to the cavity of the involucre.

‡ *Doubtful Species.*

7. *A. hispida* (Pursh): canescent-hispid throughout; leaves bipinnatifid, the segments incised; racemes terminal, somewhat paniculate. *Pursh, fl.* (*suppl.*) 2. *p.* 743.
South Carolina, *Catesby* (*Herb. Sherard.*) About a foot high: flowers larger than in A. trifida. *Pursh.*

8. *A. tomentosa* (Nutt.): perennial; stem low; leaves bipinnatifid, the lower side white and tomentose; spikes solitary. *Nutt. gen.* 2. *p.* 186
Upper Missouri: rare; 1–2 feet high. *Nuttall.*

81. FRANSERIA. *Cav. ic.* 2. *t.* 200; *Willd. hort. Berol. t.* 2; *DC.*

Sterile heads occupying the upper portion, the fertile the base of the racemes or spikes. STERILE FL. Involucre hemispherical, composed of 8–12 united scales, 15–20-flowered. Receptacle flattish, chaffy; the chaff filiform. Corolla infundibuliform, 4–5-toothed. Anthers tipped with a mucronate-setigerous inflexed appendage. Ovary none: abortive style included, radiate-penicillate at the summit. FERTILE FL. Involucre ovoid or oblong, closed, covered with uncinate or spinescent prickles (composed therefore of numerous pluriseriate united scales, each tipped with a prickle), 1–4-celled, with a single flower in each. Corolla none, or a rudiment appressed to the base of the style. Stamens none. Branches of the style filiform, obtuse at the summit. Achenia oblong.—Herbaceous or suffrutescent (American) plants, with alternate coarsely toothed or lobed, or 1–2-pinnately parted leaves; the fertile heads somewhat aggregated at the base of the sterile spikes or racemes; the evolution of the latter mostly centripetal! Sterile heads ebracteate.

§ *Fertile involucre* (1-*celled*) *armed with straight spines.*—CENTROLÆNA, DC.

* *Perennial or suffruticose.*

1. *F. Chamissonis* (Less.): hirsute-canescent; stems decumbent, stout; leaves roundish-elliptical, crenate-toothed, abruptly narrowed into a long petiole; involucre of the densely spicate sterile heads 10–12-toothed, hirsute; spines of the fructiferous involucre short and very stout; achenia large.—F. Chamissonis α. malvæfolia, *Less. in Linnæa*, 5. *p.* 507; *DC. l. c.*

β. cuneifolia: leaves oval or elliptical, tapering by a cuneate 3-nerved base into a long petiole; the upper often incisely toothed.—F. cuneifolia, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 345.

Coast of California, *Chamisso. β.* Mouth of the Oregon, *Nuttall!*—Stem (ligneous at the base, *Less.;* succulent, *Nutt.*) 1–2 feet long.—Lessing remarks that one of his specimens has the uppermost leaves bipinnately divided; and in Nuttall's specimens they are sometimes incised; so that the following different as it appears, may not be distinct.

2. *F. bipinnatifida* (Nutt.): herbaceous; stems decumbent, villous-hirsute; leaves silky-canescent, bipinnately divided; the ultimate segments linear, short, obtuse, sometimes 1–2-toothed; sterile heads in a dense spicate raceme, with nearly glabrous 10–12-toothed (about 30-flowered) involucres; spines of the fructiferous involucre short and very stout.—*Nutt.! l. c.* F. Chamissonis *β.* pinnatisecta, *Less. l. c.; DC.! l. c.* Ambrosia paniculata, *Hook. fl. Bor.-Am.* 1. *p.* 309, as to spec. from N. W. Coast? (but our specimen has no flowers.)

Coast of California, very common, *Chamisso, Douglas! Nuttall!* Nootka, *Dr. Scouler!*

3. *F. pumila* (Nutt.! l. c.): silky-canescent; leaves on long petioles 3-pinnatifid; the ultimate segments linear-oblong, crowded; sterile involucres 5–7-toothed, about 12-flowered.

St. Diego, California, *Nuttall!*—Plant 4–6 inches high. Spike not exserted beyond the leaves. We have not seen the fruit.

4. *F. discolor* (Nutt.! l. c.): root creeping; leaves interruptedly bipinnatifid, nearly smooth above, closely canescent-tomentose beneath; segments subovate, acute, confluent on the wide rachis; stem short, with the lateral branches decumbent; sterile involucres about 5–6-toothed. *Nutt.*

Rocky Mountains near the Colorado of the West. A very remarkable and distinct species. Stems about a span long, slightly pubescent. Leaves with a lanceolate outline, about 6 inches long. Fertile flowers few: fruit spiny. *Nuttall.*—We have not seen the fully developed flowers, nor the fruit.

* * *Annual.* (Ambrosidium, *Nutt.*)

5. *F. Hookeriana* (Nutt.): much branched, paniculate; stem scabrous and more or less hirsute; leaves bipinnatifid, with few oblong or somewhat linear segments, strigose-canescent; racemes paniculate; sterile involucres 5–8-cleft, 10–20-flowered; the fructiferous involucre covered with (12 or more) long and slender flattish spreading spines.—F. Hookeriana & F. montana, *Nutt.! l. c.* Ambrosia acanthicarpa, *Hook.! fl. Bor.-Am.* 1. *p.* 309.
Saskatchawan to the Oregon River, *Douglas! Drummond!* and near the sources of the Colorado of the West, *Nuttall!*—Fertile portion of the racemes often as long as the sterile, frequently leafy at the base and partly compound. Sterile heads small, on filiform pedicels.

82. XANTHIUM. *Tourn. inst. t.* 252; *Linn.*; *Gærtn. fr. t.* 164; *Schkuhr, handb. t.* 291; *DC. l. c.*

Heads glomerate-spicate; the spikes sterile at the summit. STERILE FL. numerous in subglobose heads; the scales of the involucre distinct, in a single series. Receptacle oblong or cylindraceous, chaffy. Stamens inserted in the base of the short and dilated 5-toothed and somewhat hairy corolla: anthers distinct, but connivent. Style abortive, undivided. FERTILE FL. two, enclosed in a 2-celled ovoid or oblong coriaceous closed involucre, which is clothed with hooked prickles and terminated by 1 or 2 stout beaks. Corolla filiform. Stamens none. Branches of the style linear-filiform. Achenia solitary in each cell of the involucre, oblong, flat.—Coarse annual weeds, with branching stems, and alternate, petioled, lobed or toothed leaves.

§ 1. *Leaves cordate, lobed, incised, or toothed, with no spines at their base: fructiferous involucre with* 2 *beaks.*—Euxanthium, *DC.*

1. *X. strumarium* (Linn.): fructiferous involucre oval, somewhat pubescent; the beaks straight (appressed or spreading); leaves 3–5-lobed incisely-toothed; the lobes acute.—*Linn. spec.* (*ed.* 2) *p.* 1400; *Fl. Dan. t.* 270; *Lam. ill. t.* 765, *f.* 1; *Engl. bot. t.* 2544; *DC.! prodr.* 5. *p.* 523.
β. Canadense: fructiferous involucre pubescent-scabrous, or at length glabrous; the beaks straight or slightly incurved; stem usually spotted. —X. majus Canadense, *Herm. Lugd. p.* 635? X. elatius Americanum, &c., *Moris. hist.* 3. *p.* 604. *sect.* 15. *t.* 2, *f.* 2? X. Canadense, *Mill. dict. no.* 2? *Hook. & Arn. bot. Beechey, p.* 148. X. Carol. medium, *Dill. Elth. t.* 321? excl. *fig.* 13–16. X. Americanum, *Walt. Car. p.* 231? X. macrocarpon *β.* glabratum, *DC. l. c.* X. strumarium, *Michx. fl.* 2. *p.* 182; *Ell. sk.* 2. *p.* 479?
Waste places, around barnyards, &c., apparently introduced. Also Key West, Florida, *Mr. Blodgett!* (with fruit a little smaller than the European plant, the beaks appressed.) *β.* Fields, &c., Canada! Northern and Western States! and probably in the Southern States. Also in California, *Hook. & Arn.* July–Sept.—The true X. strumarium is more or less naturalized; the var. *β.* is probably indigenous, and perhaps a distinct species; but we can indicate no further characters to distinguish it, except that the fruit is in general a little larger than in the European plant, and the leaves perhaps less lobed.—*Burr-weed. Cockle-burr. Clot-burr.*

2. *X. echinatum* (Murray): fructiferous involucre oval, very densely clothed with rigid slender prickles, which are strongly hispid, as well as the

more or less incurved beaks; stem and petioles rough and strigose, spotted; leaves scabrous, broadly subcordate, obtuse, irregularly repand-toothed, obscurely lobed.—*Murr. comm. Gœtt.* 6 (1783–84) *p.* 32, *t.* 4 (good figure); *Willd. spec.* 4. *p.* 374. X. maculatum, *Raf.! in Sill. jour.* 1. *p.* 151. X. orientale, *Muhl. cat. p.* 89; *Nutt. gen.* 2. *p.* 186; *Torr.! cat. pl. New York, p.* 73; not of *Linn.* X. macrocarpon, *DC.! prodr.* 5. *p.* 523, in part; *Beck, bot. p.* 210.

β. prickles of the oval-oblong fructiferous involucre stouter and less crowded; leaves incisely lobed.

Waste places near salt water, Massachusetts! and New York! to Carolina! *β.* Banks of Spirit Lake, head-waters of the Little Sioux River of the Missouri, *Mr. Nicollet!* Aug.–Oct.—A stout and very coarse plant, 1–2 feet high. Mature fruit about an inch and a quarter long, turgid, three-fourths to nearly an inch broad, including the slender but rigid recurved-spreading prickles with which it is very densely invested, and which, as well as the beaks, are clothed with rigid bristly hairs. This is certainly different from the X. macrocarpon, *DC.*, which has an oblong fruit with very stout, suberect and scattered prickles. Murray's plant was raised from seeds collected at New York by Wangenheim. We have never met with it at a distance from the sea-coast, except the specimens of var. *β.*, which are, however, from a region which abounds in salt marshes. These indeed approach X. macrocarpon, and may prove to belong to that species; but they are apparently in a stunted state.

§ 2. *Leaves narrowed into the petiole, furnished with spines at their base: fructiferous involucre with a single beak.*—Acanthoxanthium, *DC.*

3. *X. spinosum* (Linn.): spines at the base of the leaves 3-parted, slender; stem much branched; leaves ovate-lanceolate, cuneate at the base, entire or somewhat 3-lobed, with the middle lobe prolonged, acuminate, the lower surface and the veins of the upper canescent; involucre cylindrical-oblong, with an inconspicuous beak; the prickles slender.—*Linn. spec.* (*ed.* 2) 2. *p.* 1400; *Lam. ill. t.* 655, *f.* 4; *Ell. sk.* 2. *p.* 479; *DC.! prodr.* 5. *p.* 523.

Naturalized in many places along the coast from Massachusetts! to Georgia! Sept.–Nov.—Heads few, or solitary and sessile in the axils. Spines yellowish.

Subtribe 2. HELIANTHEÆ, *Less.*—Heads heterogamous and radiate, rarely homogamous and discoid; the disk-flowers perfect. Receptacle chaffy. Lobes of the corolla in the perfect flowers often somewhat thickened and papillose. Anthers blackish, not caudate at the base. Pappus either wanting, or coroniform, or of awns which are sometimes chaffy or with chaffy scales intermixed, never of capillary bristles, nor of several uniform and distinct chaffy scales.—Leaves commonly opposite.

CONSPECTUS OF THE GENERA.

Div. 1. HELIOPSIDEÆ.—Rays fertile, rarely none. Achenia with a thick outer integument, not obcompressed.

83. MELANTHERA. Rays none. Pappus of few rigid caducous bristles.
84. ZINNIA. Rays persistent. Pappus 1–2-awned, persistent.
85. WYETHIA. Rays numerous. Pappus coroniform-toothed and 1–3-awned.

86. **Balsamorhiza.** Rays numerous. Pappus none. Receptacle flat.

87. **Heliopsis.** Rays 10–15. Pappus none. Receptacle conical.

88. **Tetragonotheca.** Rays 6–9. Pappus none. Scales of the exterior involucre 4, foliaceous, united towards the base.

89. **Halea.** Rays 6–12. Pappus of numerous distinct, small and rigid scales. Exterior involucre of 4–5 foliaceous scales united below.

Div. 2. EUHELIANTHEÆ.—Rays sterile. Achenia never obcompressed.

* *Pappus coroniform, somewhat 2-toothed, or none.*

+ Receptacle conical or columnar.

90. **Echinacea.** Achenia quadrangular. Chaff with a cartilaginous cusp.

91. **Rudbeckia.** Achenia quadrangular. Chaff navicular or concave.

92. **Lepachys.** Achenia compressed, somewhat 1–2-winged, 1–2-toothed. Chaff truncate.

93. **Dracopis.** Achenia terete. Chaff linear.

+ + Receptacle flat or convex.

94. **Gymnopsis.** Pappus coroniform. Achenia enclosed in the chaff.

95. **Encelia.** Pappus none. Margins of the compressed achenia villous.

* * *Pappus aristiform or squamelliform.*

96. **Viguiera.** Pappus of 4 squamellæ and 2 awns. Involucre scarcely imbricated.

97. **Helianthus.** Pappus of 2 chaffy awns and often 2–4 squamellæ, caducous. Involucre imbricated. Achenia wingless.

98. **Helianthella.** Pappus lacerate-toothed or awned at the angles. Achenia slightly winged or margined.

99. **Actinomeris.** Pappus of 2 persistent awns. Achenia winged.

Div. 3. COREOPSIDEÆ.—Rays sterile. Achenia obcompressed, not rostrate. Awns not retrorsely hispid.

100. **Agarista.** Achenia villous. Pappus of 2 long chaffy scales.

101. **Coreopsis.** Achenia mostly glabrous.

Div. 4. BIDENTIDEÆ.—Rays sterile. Achenia either obcompressed or rostrate. Awns retrorsely hispid.

102. **Cosmos.** Achenia rostrate. Awns deciduous. Chaff slender.

103. **Cosmidium.** Achenia not rostrate. Awns persistent. Chaff short and obtuse. Disk-corolla deeply cleft.

104. **Bidens.** Achenia rostrate or erostrate. Awns persistent. Disk-corolla 5-toothed.

Div. 5. VERBESINEÆ.—Rays fertile, rarely none. Achenia mostly compressed or obcompressed, with a thin exterior integument.

* *Achenia all obcompressed. Disk-corolla with a barbellate ring. Involucre double.*

105. **Leptosyne.** Pappus minute and cup-shaped. Rays 8–15.

106. **Tuckermannia.** Pappus none. Rays 15–20.

* * *Achenia, at least those of the disk, compressed.*

107. Spilanthes. Receptacle conical. Appendages of the style truncate. Rays deciduous, often none.
108. Lipochæta. Receptacle flattish. Achenia awned from the angles, and with chaffy or squamellate teeth between the awns.
109. Verbesina. Receptacle flattish. Achenia 2-awned. Rays few or none.
110. Ximenesia. Receptacle convex. Achenia of the disk 2-awned and winged, of the ray wingless. Rays numerous.
111. Sanvitalia. Receptacle convex. Achenia of the ray 3-sided and 3-awned, of the disk compressed, scarcely awned. Rays persistent.

Div. 1. Heliopsideæ, *DC.*—Rays pistillate and fertile (in Melanthera none), ligulate. Achenia never obcompressed (that is, flattened) parallel with the scales of the involucre or chaff of the receptacle; the exterior integument (calyx-tube) thick and firm, often separable from the interior. Pappus none, or coroniform, frequently toothed or with one or more rigid awns.

83. MELANTHERA. " *Rohr, in Kiob. nat. hist. selsk.* 2. (1792) *p.* 213";* *Cass., in jour. phys.* 1823, *DC. prodr.* 5. *p.* 544.

Melananthera, *Michx. &c.*

Heads discoid, many-flowered; the flowers all tubular and perfect. Scales of the involucre in a double series, nearly equal. Receptacle convex; the persistent chaff partly sheathing the flowers. Teeth of the corolla papillose. Branches of the style hispid above, acuminate. Achenia short, compressed-quadrangular, or sometimes triangular, truncate at the summit. Pappus of 2–18 rather rigid scabrous caducous bristles or awns.—Perennial herbaceous or rarely suffrutescent (American, tropical) scabrous plants, with quadrangular branching stems. Leaves opposite, or rarely ternately verticillate, petioled, triplinerved, toothed or serrate, often 3-lobed. Heads ternate or solitary, peduncled. Corolla white. Anthers black with whitish appendages.

1. *M. hastata* (Michx.): leaves opposite, very scabrous, mostly hastate-3-lobed; scales of the involucre lanceolate; chaff of the receptacle acuminate-cuspidate; awns of the pappus 2–3.—*DC.! prodr.* 5. *p.* 545. M. trilobata & panduræformis, *Cass. in dict. l. c.* 29, *p.* 485. Melananthera hastata, *Michx.! fl.* 2. *p.* 107; *Pursh! fl.* 2. *p.* 519; *Ell. sk.* 2. *p.* 315. Bidens nivea, *β.* & *γ. Linn.* (ex syn. *Dill. Elth. t.* 49 *&* 47); *Walt. Car. p.* 201*?* Athanasia hastata, *Walt.! l. c.*
Dry soil, S. Carolina! to Florida! and Louisiana! (Also in Cuba, *La Sagra*, ex *DC.*) July–Sept.—Stem 4–6 feet high, often beautifully marbled or spotted. Leaves variable in form, between lanceolate and deltoid-ovate, either deeply or slightly hastate-3-lobed, or somewhat panduriform, sometimes undivided, acute or acuminate. Epigynous disk or nectary rather conspicuous, sheathing the base of the style.

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* *Transactions of the Natural History Society of Copenhagen.*

2. *M. deltoidea* (Michx.): leaves opposite, ovate-deltoid, undivided, or obscurely angulate-lobed, canescent-scabrous; scales of the involucre ovate; chaff of the receptacle somewhat membranaceous, obtuse, mucronulate.—*DC. l. c.* M. urticæfolia, *Cass.* Melananthera deltoidea, *Michx. l. c.* (note.) M. Linnæi, *H. B. & K.* Bidens nivea, *Linn. l. c.* (*a.* excl. syn. *Dill.*); *Swartz, obs. p.* 296. Calea aspera, *Jacq. ic. rar. t.* 583.
Key West, Florida, *Mr. Blodgett!*—A common species in the West Indies.

84. ZINNIA. *Linn.; Gærtn. fr. t.* 172; *Schkuhr, handb. t.* 252; *DC.*

Heads many-flowered; the ray-flowers pistillate; those of the disk tubular, perfect. Involucre imbricate; the scales roundish or oval, margined. Receptacle conical or somewhat cylindrical, covered with oblong conduplicate chaffy scales which envelope the disk-flowers. Rays obovate or oblong, coriaceous, reticulated, persistent, continuous with the summit of the achenium, or rarely somewhat articulated. Lobes of the corolla of the disk densely velvety-villous at the summit with colored hairs. Branches of the style in the disk-flowers terminated by a hairy somewhat capitate cone. Achenia nearly wingless; those of the ray somewhat 3-sided, mostly destitute of pappus; of the disk compressed or flat, 1–2-awned or toothed, rarely naked.—Annual (American) herbs, with opposite mostly sessile entire leaves. Heads solitary terminating the branches, showy, persistent. Rays purple, orange, scarlet, or greenish-white.

1. *Z. multiflora* (Linn.): stem erect, branching, somewhat hirsute; leaves scarcely somewhat petioled [or closely sessile] ovate-lanceolate; peduncles longer than the leaves; the apex (particularly of the central one) hollow and inflated or obconical, striate; scales of the campanulate involucre appressed; ligules obovate, obtuse or emarginate; chaff of the receptacle obtuse, entire; achenia of the disk with a single awn. *DC.*—*Linn. spec.* (*ed.* 2) 2. *p.* 1269; *Linn. f. dec. t.* 12; *Lam. ill. t.* 685; *Willd. spec.* 3. *p.* 2139; *DC.! prodr.* 5. *p.* 535.
Louisiana, *Willdenow.* Carolina, *Bosc!* Alabama, *Dr. Gates!* Key West, *Mr. Blodgett!* Texas, *Drummond!* Sept.—This is doubtless a native plant, at least in some of the above-cited localities. The specimens accord with the cultivated plant, in which also the leaves are often closely sessile, and the species is probably, as De Candolle suspects, not sufficiently distinct from Z. pauciflora, *Linn.* The rays are purplish in all our specimens, while in that of Bosc (in *herb. DC.*) they appear to have been yellow.

2. *Z. grandiflora* (Nutt.): perennial? dwarf; stem much branched from the base; leaves linear-lanceolate, connate, with scabrous margins; scales of the involucre rounded; rays (yellow) very large, orbicular-oval; paleæ fimbriate; achenia of the disk with a single awn. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 348.
Rocky Mountains, *Dr. James!*—A very distinct and splendid species. Stem somewhat hirsute, scarcely more than 5 inches high. Leaves about an inch long, 2–3 lines wide. Rays three-fourths of an inch wide, appearing cordate at the base: disk apparently orange. *Nutt.*—The plant is minutely strigose, and the crowded leaves are impressed-punctate.

85. **WYETHIA.** *Nutt. in jour. acad. Philad.* 7. *p.* 39, *t.* 5, (1834), *& in trans. Amer. phil. soc. l. c.* (*n. ser.*) 7. *p.* 351.
Alarçonia, *DC.* 1836.

Heads many-flowered; the ray-flowers numerous, pistillate, and sometimes with sterile filaments. Scales of the campanulate involucre loosely and irregularly imbricated in 2 or 3 series, somewhat equal, foliaceous, as long as the disk; the innermost smaller and resembling the chaff. Receptacle slightly convex; the chaff lanceolate, carinate, acute, as long as the flowers and partly embracing them. Rays large. Corolla of the disk cylindrical, elongated, with a short proper tube, 5-toothed; the teeth nearly glabrous. Branches of the style in the ray-flowers glabrous; in the disk elongated, linear-filiform, revolute, strongly hispid, nearly smooth on the back. Achenia stout, elongated, 4–5-angled, prismatic, terminated with a rigid coroniform or calyciform 5–10-toothed or laciniate pappus, one or more of the teeth usually prolonged into a rigid persistent awn.—Perennial herbs (natives of Oregon and California), with somewhat the habit of Helianthus or Inula Helenium, furnished with long tap-roots, usually simple stems, with alternate mostly entire veiny leaves, and large solitary heads. Flowers of the ray and disk yellow. [illegible]

* *Scales of the involucre linear-lanceolate, numerous, more or less hirsute, as well as stem and leaves: rays* 12–20.

1. *W. helianthoides* (Nutt.): dwarf; stem very hairy at the summit, bearing a single head; leaves lanceolate, entire, somewhat pubescent, with scabrous margins, tapering into a petiole; exterior scales of the involucre linear, the interior lanceolate; pappus short, unequally and obtusely 5–10-toothed, and sometimes with a single slender awn.—*Nutt.! in jour. acad. l. c. t.* 5, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 351.

"In the Kamas plains near the Flat-Head River, towards the sources of the Oregon, and in the plains near the Blue Mountains of Oregon," *Mr. Wyeth! Nuttall!*—About a span high. Rays pale yellow. Summit of the achenium and the variable coroniform pappus minutely pubescent.—We have not the means of satisfying ourselves whether this species is sufficiently distinct from the following.

2. *W. robusta* (Nutt.): stem and midrib of the leaves villous-hirsute, bearing a single head; cauline leaves lanceolate, acute, pubescent, entire, tapering to the base, the lower petioled; the radical large, elliptical-lanceolate, petioled, often sparingly serrate; scales of the involucre lanceolate, very hirsute, especially on the margins; pappus of 5–10 irregular stout teeth (silky-pubescent) and mostly of 1 to 4 stout awns.—*Nutt.! in trans. Amer. phil.* ~~*soc. l. c.*~~ Alarçonia helenioides, *DC. prodr.* 5. *p.* 537? (and therefore Wyethia helenioides, *Nutt. l. c.?*)

β. leaves appearing somewhat glutinous; the lower elongated lanceolate, tapering into slender petioles.—Helianthus longifolius, *Hook.! fl. Bor.-Am.* 1. *p.* 312, *& bot. Beechey, suppl. p.* 353, as to the Oregon plant. H. Hookerianus, *DC. prodr.* 5. *p.* 590.

"Plains of the Oregon near the confluence of the Wahlamet, common, in wet places," *Nuttall!* β. "Common in low moist soil on the plains of the Columbia near the ocean, the plains of the Multnomah, and in the vallies of the Rocky Mountains," *Douglas!* in *herb. Hook.* June.—Stem stout, 1½–3

[illegible] = 1784 [illegible]

311 [illegible]

feet high, usually naked at the summit. Radical leaves a foot or more in length, 1 to 2½ inches wide.—In Mr. Nuttall's specimens, we observe traces of the clammy varnish which is so apparent on the leaves of the var. β.

* * *Scales of the involucre fewer, subspatulate-oblong: stem sometimes branching: rays seldom* 12.

3. *W. angustifolia* (Nutt.): stem hirsute or pubescent above; leaves spatulate-lanceolate, or the lower and radical spatulate-oblong, entire, nearly glabrous when old, attenuate at the base; the lowest petioled; scales of the involucre foliaceous, hirsute, especially on the margins; achenium hairy towards the truncate or obscurely coroniform summit, 1–2-awned, and often with a short sharp tooth from one or more of the remaining angles.—*Nutt.! l. c.* Alarçonia angustifolia, *DC.! l. c.* Helianthus longifolius, *Hook. & Arn.! bot. Beechey, p.* 149. — 310. Geyer! Coulter. ?

California, *Beechey! Douglas! Nuttall!*—Stem varying from 8 to 20 inches in height, with a very large head, terminating the stem or branches. Lower leaves sometimes more than an inch broad, wider indeed in proportion to their length than in the preceding, often obtuse. Scales of the involucre an inch long, and a third of an inch broad.—We are uncertain whether the Alarçonia helenioides of De Candolle is founded upon an awnless state of this, or the preceding species.

4. *W. amplexicaulis* (Nutt.): smooth and glabrous throughout, somewhat shining or glutinous; leaves lanceolate-elliptical, rather coriaceous, venose; the radical on short petioles, sometimes serrulate; the lower cauline narrowed at the base, nearly sessile; the upper partly clasping; heads solitary, or often two or more from the axils of the upper leaves, on short peduncles; scales of the involucre lanceolate-ovate or oblong, appressed, glabrous; pappus unequally 3–8-toothed, one or two of the teeth often prolonged into awns.—*Nutt.! l. c.* Espeletia amplexicaulis, *Nutt.! in jour. acad. Philad.* 7. *p.* 38.

In the Rocky Mountains, on Flat-Head River &c., *Mr. Wyeth! Nuttall!* June.—Root large and thick, used for food by the Indians. Stem 8 inches to 2 feet high. Lower leaves 6–12 inches long, 1–2 wide, often obtuse and somewhat obovate. Heads smaller than in the preceding; the broad scales of the involucre few, barely in a double series.

"W. scabra, Hook.: 96 Geyer is entirely n. sp.! Dr Bigelow an-

86. BALSAMORHIZA *Hook. fl. Bor.-Am.* 1. *p.* 310; (under Heliopsis); *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 349.

Heads many-flowered; the ray-flowers pistillate, in a single series; those of the disk tubular, perfect. Scales of the involucre imbricated in 2 to 3 or more series; the exterior foliaceous, as long as the disk; the innermost chaffy. Receptacle nearly flat; the chaff linear-lanceolate, acute, somewhat foliaceous, scarcely embracing the flowers. Corolla of the disk cylindrical, elongated, with a short proper tube, 5-toothed; the teeth sparingly bearded externally. Branches of the style in the disk-flowers filiform, very hispid throughout. Achenia quadrangular, or those of the ray compressed, glabrous, entirely destitute of pappus.—Low pubescent or canescent herbs (natives of the plains of Oregon and the Rocky Mountains); with a thick fusiform dark-colored root, abounding in a terebinthine juice, and chiefly radical leaves; the simple stems or scapes bearing usually solitary large heads, which resemble those of Helianthus. Ray and disk yellow.

The large roots of all the species, especially those of the second section, are employed by the Indians for food: when cooked upon hot stones, or otherwise, they acquire a sweet and rather agreeable taste. *Nuttall, &c.*

§ 1. *Leaves pinnatifid: scapes bearing a single head.*

1. *B. Hookeri* (Nutt.! l. c.): silky-pubescent or canescent; leaves with a lanceolate outline, pinnately parted; the segments very numerous, crowded, linear, sparingly toothed or incised, or the lower pinnatifid, and the uppermost confluent; scapes several from the same root; scales of the involucre narrowly lanceolate, acute, numerous, the exterior somewhat spreading. —Heliopsis? balsamorhiza, *Hook.! fl. Bor.-Am.* 1. *p.* 310.

β. leaves ovate-lanceolate, sinuate-pinnatifid and crenate-serrate.—Heliopsis (Balsamorhiza) terebinthacea, *Hook. l. c.?* (A state with the segments more or less confluent, which often occurs in a portion of the leaves.)

Plains of the Oregon, common, *Douglas! Nuttall!*—Stem at first 6–8 inches, in fruit 12–18 inches high, naked, or with one or two rudimentary or small pinnatifid leaves. Rays 12–18. Root exuding a copious limpid resin when wounded, with a strong turpentine odor.—By an error of the press, in Hooker's character, the scales of the involucre, instead of the radical leaves, are said to equal the stem in length: the latter is the case when the flowers appear; but in fruit the scape is much longer.

2. *B. hirsuta* (Nutt.! l. c.): somewhat hirsute, not canescent; leaves with an elongated lanceolate circumscription, pinnately divided; the divisions lanceolate-oblong or cuneiform, pinnatifid, often 2–3-parted, with rough hirsute-ciliate margins; petioles dilated and very woolly at the base; scales of the involucre broadly lanceolate, lanuginous-ciliate, closely imbricated in 4 or 5 series.

Dry plains near the Blue Mountains of Oregon, and in the Grande Ronde prairie, *Nuttall!*—Leaves about a foot long. Scape often entirely naked.

3. *B. incana* (Nutt.! l. c.): densely canescent-tomentose throughout; leaves with an oblong or deltoid-lanceolate circumscription, pinnately divided; the divisions oval or oblong, entire, or with the lower margin somewhat toothed, the uppermost confluent; scales of the involucre imbricated in 2–3 series; chaff of the receptacle much shorter than the flowers.

In the Rocky Mountains, *Nuttall!*—Scape 6–8 inches high, bearing a very showy head; the rays 12–14, more than an inch long, deep yellow, sometimes with infertile filaments, as also in the other species.

4. *B. macrophylla* (Nutt.! l. c.): nearly glabrous; leaves oblong or oval, pinnately parted; the divisions lanceolate-oblong, entire, sometimes slightly lobed or toothed at the base, with somewhat ciliate and scabrous margins; the uppermost confluent; scales of the involucre in about 3 series, lanceolate, the exterior foliaceous and reflexed.

Rocky Mountains, near the sources of the Colorado of the West, *Nuttall!* —Leaves and stem sprinkled with minute glandular atoms; the segments of the latter 2–3 inches long, sometimes nearly an inch wide.

§ 2. *Leaves entire or crenate, hastate-cordate, or the few cauline tapering at the base, all on long petioles: scapes bearing* 1 *to* 3 *heads: receptacle broad and flat.*—ARTORHIZA, Nutt. (Espeletia. *Nutt.*, not of *H. B. & K.*)

5. *B. sagittata* (Nutt.! l. c.): canescently tomentose; radical leaves cordate-hastate or cordate-ovate, entire, acute, somewhat 3-nerved at the base; the cauline linear, attenuate below; exterior scales of the involucre longer than the inner, spreading, lanceolate, densely tomentose; rays 20–24.—

Buphthalmum sagittatum, *Pursh, fl.* 2. *p.* 564, ex *Nutt.* Espeletia sagittata, *Nutt.! in jour. acad. Philad.* 7. *p.* 38, *t.* 4.

In the Rocky Mountains by Flat-Head River, &c., *Lewis*, *Mr. Wyeth!* —Head large and showy, 3 to 4 inches in diameter, while the scapoid stem is not more than a span high. *Nutt.*

6. *B. helianthoides* (Nutt.! l. c.): leaves densely tomentose-canescent; the radical on very long petioles, oblong, cordate-hastate, entire, acutish, the cauline lanceolate; scales of the tomentose involucre lanceolate, acuminate, appressed; rays about 15.—Espeletia helianthoides, *Nutt.! in jour acad. Philad. l. c.*

Rocky Mountains, with the preceding, (*Mr. Wyeth!*) to which it is very similar; but differs, according to Mr. Nuttall, in having a smaller and more imbricated involucre, &c. We should have taken this species for the Buphthalmum sagittatum of Pursh, except that that author states that the exterior scales of the involucre are longer than the disk.

7. *B. deltoidea* (Nutt.! l. c.): hirsute-pubescent; radical leaves on very long petioles, deltoid-cordate, acute, with undulate or crenate margins; the cauline 1–3, small, ovate or spatulate; involucre woolly or tomentose at the base; the scales in about 2 series; the exterior largest, linear-lanceolate, foliaceous, spreading, longer than the disk; rays 12–20.

Oregon, at Fort Vancouver, *Dr. Scouler!* and in wet open places on the Wahlamet, *Nuttall!* June.—Scapes a foot or more in height. Rays about an inch long. 1765, Hartweg = B. glabrescens Benth. is I fear only a [illegible] variety of this (Benth in Hb. Hook)

87. HELIOPSIS. *Pers. syn.* 2. *p.* 473; *DC. prodr.* 5. *p.* 550, excl. § 3.

Heads many-flowered; the ray-flowers (10 or more) pistillate, in a single series; those of the disk tubular, perfect. Scales of the involucre in 2–3 series; the exterior foliaceous and somewhat spreading; the interior shorter than the disk. Receptacle conical; the lanceolate or linear chaff somewhat embracing the achenia. Branches of the style in the disk-flowers hairy towards the apex, which is obtuse and tipped with a mucronate appendage. Achenia glabrous, quadrangular, or in the ray 3-sided and convex externally. Pappus none, or rather an obsolete truncate crown.—Perennial (American) herbs, with rather large heads on long peduncles, terminating the stem or branches. Leaves opposite, petioled, triplinerved, serrate. Flowers yellow.

§ 1. *Rays articulated with the ovary, and at length deciduous: achenia smooth.*—EUHELIOPSIS, *DC.*

1. *H. lævis* (Pers.): nearly smooth and glabrous; leaves ovate-lanceolate or oblong-ovate, somewhat truncate at the base, or abruptly tapering into the petiole, coarsely serrate.—*Pursh! fl.* 2. *p.* 563; *Ell. sk.* 2. *p.* 407; *Darlingt.! fl. Cest. p.* 479; *Dunal! in mem. mus.* 5. *p.* 55; *Hook. bot. mag. t.* 3372; *DC.! l. c.* Buphthalmum helianthoides, *Linn.! hort. Ups.*, *& spec.* 2. *p.* 904: *Michx.! fl.* 2. *p.* 130; *L'Her. stirp. t.* 45; *Schkuhr, handb. t.* 257. Silphium helianthoides, *Linn.! spec.* 2. *p.* 920, ex syn. *Gronov.* Rudbeckia oppositifolia, (*Gronov.*) *Linn.! l. c.* Helianthus lævis, *Linn.! spec. ed.* 2., excl. syn. *Gronov.* Helepta parviflora, H. grandiflora, &c., *Raf.! neog.*

β. gracilis: much smaller in all its parts; stem very slender, minutely pubescent towards the summit; leaves lanceolate or ovate-lanceolate, acute at the base, scabrous.—H. lævis *β., Hook.! compan. to bot. mag.* 1. *p.* 98. H. gracilis, *Nutt. in trans. Amer. phil. soc. l. c.*

γ. scabra: stem and oblong-ovate leaves scabrous; involucre pubescent or somewhat downy.—H. scabra, *Dunal! in mem. mus.* 5. *p.* 56, *t.* 4; *Hook. fl. Bor.-Am.* 1. *p.* 310.

Banks of streams, and in dry soil, throughout the United States! *β.* Louisiana, *Drummond, Dr. Hale!* Georgia, *Dr. Boykin!* Alabama, *Dr. Gates!* &c. *γ.* With the ordinary form, particularly in the Western States from Saskatchawan to Arkansas!—Stem 2–4 feet high; in var. *β.* 1–2 feet, and bearing usually a single head. Exterior scales of the involucre extremely variable; sometimes scarcely longer than the innermost, and with very short foliaceous tips; but often more spreading, almost entirely foliaceous, and even slightly serrate at the apex, as long as or longer than the disk. Peduncle thickened and obconical at the summit. Rays an inch or more in length, bright light yellow.—The original Helianthus lævis (H. foliis lanceolatis serratis lævibus, *Gronov. fl. Virg.*) is Bidens chrysanthemoides. Hence it were to be wished that Persoon had taken the specific name from some other of the numerous Linnæan synonyms. We have so many forms intermediate between H. lævis, H. scabra, and the very slender var. gracilis, that we unite them without the slightest hesitation; although the extremes appear abundantly different.

88. TETRAGONOTHECA. *Dill. Elth. p.* 378, *t.* 283; *Linn.; DC. prodr.* 5. *p.* 552.

Heads many-flowered; the ray-flowers (6–9) pistillate; those of the disk tubular, perfect. Involucre double; the exterior composed of 4 large and broadly ovate foliaceous acuminate scales, united towards the base into a 4-angled or 4-winged cup, valvate and reduplicate in æstivation; the interior of about 8 very small oval-lanceolate scales, resembling the chaff of the receptacle, partly clasping the achenia of the ray. Receptacle convex-conical; the chaffy scales membranaceous, lanceolate, acuminate, nerved. Corolla hairy at the base; the ray with a manifest tube; the ligules large and broad, coarsely about 3-toothed at the apex, many-nerved; of the disk deeply 5-toothed (10- or mostly 15-nerved); the teeth erect, glabrous. Style, in the disk-flowers, bulbous at the base (above the annular epigynous disk); the branches linear, hispid, tipped with an acuminate appendage. Achenia obovoid, nearly terete, thick, smooth, flat at the summit, destitute of pappus.—A perennial herb, somewhat viscidly hairy, and sprinkled with minute resinous globules. Leaves opposite, coarsely toothed, oval or ovate-oblong, narrowed at the base, closely sessile, and often slightly connate. Heads large, pedunculate, terminating the branches. Flowers pale yellow.

T. helianthoides (Linn.!)—*Willd. spec.* 3. *p.* 2116; *L'Her. stirp. p.* 177; *Pursh, fl.* 2. *p.* 563; *Ell. sk.* 2. *p.* 407; *DC. l. c.* Polymnia Tetragonotheca, *Linn.! syst. p.* 658; *Abbot, insects of Georgia,* 2. *t.* 69; *Schkuhr, handb. t.* 263. Silphium Tetragonotheca, *Gærtn. fr. t.* 171.

Dry sandy soil, Virginia! to Florida! and Alabama! May–June, often flowering again in Sept.—Root thick. Stem 2–3 feet high, terete. Leaves 3–6 inches in length, feather-veined, sometimes also triplinerved, either repandly and unequally toothed, or with coarse and sharp salient teeth. Involucre, when expanded, two inches or more in diameter. Corolla of the disk with the proper tube short (the stamens inserted near the base), somewhat coriaceous, hairy externally (as also the summit of the ovary); the throat nearly cylindrical; the teeth ovate-lanceolate.—There are more commonly 10 nerves in the disk-corolla, approximate in pairs and nearly correspondent to the sinuses, near which they diverge, one traversing each lacinia as near to the axis as to the margin, and uniting within the apex with its fellow of the adjacent sinus, in the ordinary manner. Very frequently there are 3 nerves to each set, the middle one exactly corresponding to the sinus, but often vanishing or confluent with one of the lateral, in some part of its course: there are no nerves corresponding with the axis of the laciniæ as in Helianthus. The rays present 10 nerves, or by bifurcation 12 to 14.

89. HALEA.

Heads many-flowered; the ray-flowers (10–12) pistillate; those of the disk tubular, perfect. Involucre double; the exterior of 4 or 5 ovate foliaceous scales, united below the middle, valvate in æstivation, at length shorter than the disk; the interior of numerous (about 15) obovate or oval-lanceolate acuminate erect chaffy scales, more or less imbricated, nearly flat, many-nerved, similar to the chaff of the large conical receptacle. Corolla glabrous or nearly so; the rays broadly oval, slightly 3-toothed, tapering and involute at the base, but not tubular; of the disk deeply 5-toothed, 10-nerved. Style as in Tetragonotheca. Achenia 4-sided, pubescent, with a broad and flat summit, crowned with a short pappus, composed of about 20 thick and oval distinct and entire scales.—A tall and stout branching perennial herb, somewhat pubescent when young, with much the aspect and foliage of Tetragonotheca. Stem striate, quadrangular below. Leaves opposite, or rarely ternately verticillate, rather large, veiny, the margin thickly set with sharp unequal salient or laciniate teeth, all sessile; the lowermost oval-oblong, tapering into a narrowed base, more or less connate; the upper ovate or ovate-oblong, connate-perfoliate. Heads (rather large) on naked peduncles terminating the stem or branches. Flowers yellow.

H. Ludoviciana. [illegible]

Dry sandy soil, Western Louisiana, *Dr. Leavenworth! Dr. Hale!* Texas, *Drummond! Dr. Leavenworth!* June–Aug.—Stem 2–4 feet high. Heads about an inch in diameter. Exterior involucre very slightly angled at the junction of the scales; which are broadly ovate, obtuse, or scarcely acuminate, glabrous, persistent, and at length shorter than the elongated conic receptacle. Rays not twice the length of the involucre, 10-nerved. Corolla of the disk with a very short coriaceous proper tube (as in Tetragonotheca), the elongated throat slightly dilated: the 10 nerves in pairs corresponding with the sinuses, approximate but distinct from the base to near the sinuses, where they diverge and traverse the lobes of the corolla about half way between the margins and the axis. Anthers yellowish. Exterior envelope of the achenium (calyx-tube) separable. Pappus a very short chaffy crown; the scales distinct but very thickly set, obtuse, nerveless, of nearly the same texture as in Sclerolepis; the alternate ones usually smaller and almost forming an exterior series.—If the pappus alone were considered, this plant would probably be referred to the division Galinsogeæ of the subtribe Helenieæ; but its true affinity is undoubtedly with the present subtribe, and particularly with Tetragonotheca. It forms, however, a distinct and very remarkable genus, which we have named in honor of one of its discoverers, Dr. Josiah Hale of Alexandria, Western Lousiana, a zealous botanist, who has favored us with extensive collections and important observations, illustrative of the botany of that region.

Div. 2. EUHELIANTHEÆ.—Rays (neutral or imperfectly styliferous) sterile, ligulate. Achenia often compressed, but never obcompressed. Pappus coroniform, toothed, or of 1–4 awns, chaffy scales, or squamellæ, often none. (Rudbeckieæ & a part of Coreopsideæ, *DC.*)

90. ECHINACEA. *Mœnch, meth. p.* 591; *Cass. dict.*; *DC. prodr.* 5. *p.* 554.

Heads many-flowered; the ray-flowers much elongated, in a single series, somewhat styliferous but sterile; those of the disk tubular, perfect. Scales of the involucre lanceolate, ciliate, often squarrose, imbricated in 3 or more series. Receptacle conical; the navicular lanceolate chaff terminated with a cartilaginous cusp, exceeding the flowers of the disk. Corolla of the disk cylindrical, with 5 erect teeth; the proper tube almost none; the stamens therefore inserted at the very base of the corolla. Branches of the style terminated with a long lanceolate hispid appendage. Achenia of the ray abortive; of the disk 4-sided, obpyramidal, thick. Pappus coroniform, unequally toothed, marcescent or persistent.—Perennial (N. American & Mexican) herbs; with alternate, or rarely opposite, 3–5-nerved undivided leaves. Stem or branches naked above and terminated by a single large head. Rays purple, or sometimes nearly white, 2–3-toothed at the apex, at length elongated and dependent, marcescent or tardily deciduous: disk-flowers greenish or dark purple; the points of the chaff purplish.

The propriety of separating these plants from Rudbeckia was suggested by Gronovius, in 1762, and recently by Elliott, who was not aware of its establishment by Mœnch in 1794.—The long and thick blackish roots are very pungent to the taste, and are employed in popular medicine, and for the cure of ulcers, in some parts of the country, under the names of *Lobelia, Black Sampson, &c.*—The disk in all the species is at first flattish, but elevated and between globose and conical in fruit: the marcescent rays also vary in length with age, as well as in color.

1. *E. purpurea* (Mœnch): stem smooth and glabrous, striate; leaves usually scabrous, often serrate; the radical ones ovate, about 5-nerved and veiny, on long petioles; the cauline ovate-oblong or ovate-lanceolate, tapering into a margined petiole, or the uppermost almost sessile; scales of the involucre imbricated in 3–5 series, squarrose.—*Mœnch, l. c.; DC.! l. c.* Rudbeckia purpurea, *Linn.! spec.* 2. *p.* 907; *Bot. mag. t.* 2; *Schkuhr, handb. t.* 259; *Michx.! fl.* 2. *p.* 143; *Pursh! fl.* 2. *p.* 573; *Nutt. gen.* 2. *p.* 178; *Ell. sk.* 2. *p.* 450; *Bart. fl. Amer. Sept.* 2. *t.* 64. Chrysanthemum Americanum, &c., *Catesb. Car.* 2. *t.* 59. Helichroa Linnæana, elatior, amœna, furcata, &c. *Raf. neog. &c.*

β. stem glabrous or slightly hispid near the summit; leaves hispid-scabrous, the upper ones sometimes opposite.

γ. stem and leaves hispid or hispidly scabrous; rays usually shorter and rather broader.—E. serotina, *DC.! l. c.* Rudbeckia purpurea β. serotina, *Nutt.! l. c.* R. serotina, *Sweet, Brit. fl. gard. t.* 4 ; *Lodd, bot. cat. t.* 1539. R. hispida, *Hoffm.*, ex *DC.* R. speciosa, *Link. enum.* 2. *p.* 352, ex *DC.*

δ. stem and leaves hispid-scabrous; rays nearly white.

Virginia! to Georgia! and Alabama! mostly in the Western districts, and Ohio! to Louisiana! δ. Illinois, *Dr. S. B. Mead!* July–Oct.—Stem 2–5 feet high. Rays 12–20, 1½ to more than 2 inches long, dull purple.—The short pappus appears to be persistent, not deciduous as described by De Candolle. The horizontal root, which is said to distinguish E. serotina, is sometimes observed in the smooth plant.

2. *E. angustifolia* (DC. l. c.) : stem hispid, mostly simple, naked above; leaves all lanceolate and linear-lanceolate, hairy or strigose-hispid, entire, 3-nerved, all but the uppermost tapering into petioles; scales of the short involucre in about 2 series.—E. pallida, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 354 (1841). Rudbeckia pallida, *Nutt.! in jour. acad. Philad.* 7. *p.* 77. (Rays 12–15, at first often short, at length elongated and slender, 2 inches long, dependent, varying from light purple to pale rose-color.)

β. leaves crowded towards the base of the short stout stem, oblong-lanceolate, on short petioles, strongly strigose-hispid ; rays 20 or more, pale rose-color or white.

γ. leaves hirsute; the lowest lanceolate-oblong, the upper narrowly lanceolate; stem often glabrous below; rays about 15, dark red.—E. sanguinea, *Nutt.! in trans. Amer. phil. soc. l. c.* (Varies with the leaves almost glabrous.)

Prairies and low barrens, from Illinois! and Missouri! to Alabama! Arkansas! Western Louisiana! and Texas! β. Upper Missouri, *Mr. Nicollet!* May–July.—A common plant beyond the Mississippi, variable in size (1–3 feet high), usually slender, and nearly naked above the middle; the leaves 3–7 inches long, one-fourth to more than half an inch wide, on petioles of variable length. Heads smaller than in the preceding; the disk purplish-brown and usually with shorter cusps to the chaff. Root perpendicular.

3. *E.? atrorubens* (Nutt. l. c.) : glabrous; stem elongated, terete; leaves narrowly linear-lanceolate, entire, tapering into long petioles, the margins scabrous; chaff exserted, lanceolate, acute; rays very dark red. *Nutt.*—Rudbeckia atrorubens, *Nutt. in jour. acad. Philad.* 7. *p.* 80.

β.? *graminifolia:* stem slender, striate-angled, strigose-pubescent above; leaves scattered, narrowly linear, elongated, rigid, shining, slightly strigose-pubescent when young, 3-nerved (the lateral nerves marginal), acute, sessile; the lower with a long attenuate base as if petioled; rays 9 or 10, oblong, dark red-purple; chaff of the receptacle oblong, thick and fleshy, abruptly mucronate, as long as the (purple) corolla; pappus minute, 4-toothed.

Plains of Arkansas, and also in Georgia (*Dr. Wray*), *Nuttall.* β. Low pine barrens, Middle Florida, *Dr. Chapman!*—Mr. Nuttall speaks of his Rudbeckia atrorubens as "closely allied to R. purpurea and R. pallida, but perfectly distinct in its singular smoothness, very narrow entire leaves, and dark red rays, which are very showy from the intensity of their color; and in his recent memoir he accordingly refers it to Echinacea. Our plant agrees in many respects with his brief description; but has apparently still more attenuated leaves (2–3 lines wide, the lower a foot long), short rays (half an inch long), a strigose-hairy involucre, short cusps to the chaff, and short conical appendages to the style: so that it is a somewhat doubtful member of the genus. We have not seen it fully in flower; but suspect that the scarcely developed corolla (which is that of Echinacea) nearly equals the chaff in length.

91. RUDBECKIA. *Linn.* (*excl. spec.*); *Gærtn. fr. t.* 172; *Cass.*; *DC.*

Heads many-flowered; the ray-flowers neutral, in a single series; those of the disk tubular, perfect. Scales of the involucre foliaceous, in about 2 series, spreading. Receptacle conical or often more or less elongated and spiciform; the chaff concave or navicular. Corolla with a cylindraceous or somewhat dilated throat; the teeth erect or spreading. Branches of the style terminated by a very short obtuse cone, or rarely with a subulate-lanceolate barbellate appendage. Achenium quadrangular, obpyramidal or prismatic, glabrous, flat at the summit. Pappus none, or minute and coroniform, rarely somewhat conspicuous.—Mostly perennial (North American) herbs, with alternate leaves, and rather large and showy heads terminating the stem or branches. Rays yellow (rarely particolored), usually elongated, spreading or drooping. Corolla of the disk, and the style, purple or brownish-purple, sometimes greenish-yellow. Anthers fuscous.

§ 1. *Disk conical or subglobose: pappus very short and coroniform, or often none.*—RUDBECKIA proper. (Centrocarpha, *Don*, partly.)

* *Disk dark purplish-brown, subglobose or broadly conical: appendages of the style lanceolate or broadly subulate.*

1. *R. bicolor* (Nutt.): annual, hirsute; stem mostly simple, naked at the summit; leaves oblong, sessile, obscurely serrate, rather obtuse; the lowermost petioled; head (rather small) solitary; scales of the involucre linear-oblong, hispid, rather shorter than the oblong (yellow and brownish-purple) particolored rays; disk conical; chaff of the receptacle rather acute, hirsute at the summit, as long as the corolla; pappus none.—*Nutt.! in jour. acad. Philad.* 7. *p.* 81.

Arkansas and on Red River, *Nuttall!* Texas, *Drummond!*—Stem 1–2 feet high. Rays about 10, half an inch long; the lower half "intense blackish brown, with the gloss of velvet" (*Nutt.*) or dark purple; the upper part yellow. Branches of the style lanceolate, barbellate.

2. *R. hirta* (Linn.): very hirsute or hispid throughout; stems simple or slightly branched, naked at the summit; radical and lowest cauline leaves spatulate-oval or oblong, triplinerved, denticulate, petioled; the upper ovate-oblong or lanceolate, sessile, denticulate or serrate; scales of the involucre numerous, narrowly lanceolate; rays (about 14) spreading; disk broadly conical; chaff of the receptacle linear, mostly acute, hairy at the summit, about the length of the corolla; pappus obsolete.—*Linn.! spec.* 2. *p.* 907; *Michx.! fl.* 2. *p.* 143; *Pursh! l. c.*; *Brit. fl. gard.* 1. *t.* 82; *Ell. l. c.*; *Darlingt. fl. Cest. p.* 480; *DC.! prodr.* 5. *p.* 556. R. serotina, *Nutt.! in jour. acad. Philad.* 7. *p.* 80.

α. heads large; rays nearly twice the length of the involucre.—Obeliscotheca integrifolia &c., *Dill. Elth. t.* 218, *f.* 285.

β. heads smaller; rays scarcely exceeding the involucre; leaves mostly narrow.—R. strigosa *Nutt.! in trans. Amer. phil. soc. l. c.*

Dry soil, Upper Canada! and Western part of the State of New York! Michigan! &c. to Florida! Western Louisiana! and Texas! ② or ♃? July–Sept.—Stem 1–2 or 3 feet high, very rough. Rays bright yellow, 1–1½ inch long; the disk dark purplish-brown. Pappus a minute margin. Appendages of the style lanceolate or linear-subulate.

* * *Disk dark purple or brown, subglobose or broadly conical: appendages of the style very short and obtuse, or somewhat capitate.*

† Chaff glabrous and very dark purple at the summit, as well as the corolla.

3. *R. fulgida* (Ait.): stem hirsute or strigose-hispid, branching, the branches slender, naked at the summit; leaves strigose, sparingly denticulate; the cauline sessile, spatulate-oblong or oblong-lanceolate, narrowed towards the base, partly clasping, somewhat triplinerved; the radical ovate, petioled; scales of the involucre oblong or lanceolate, sometimes as long as the spreading oblong rays; chaff of the receptacle linear-oblong, obtuse or mucronulate, glabrous or slightly ciliate at the summit, rather shorter than the corolla; pappus coroniform, minute.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 251; *Bot. mag. t.* 1996; *Willd. spec.* 3. *p.* 2248; *Ell. sk.* 2. *p.* 546; *Bart. fl. Amer. Sept.* 1. *t.* 54; *Darlingt. fl. Cest. p.* 480; *DC.! prodr.* 5. *p.* 556. R. chrysomela, *Michx.! fl.* 2. *p.* 143. R. aspera, *Pers.*; *Desf. cat.* R. spathulata, *Pursh, fl.* 2. *p.* 574.

β. slender; leaves narrowly spatulate-oblong or lanceolate; heads small; rays seldom exceeding the disk.—R. gracilis, *Nutt.! gen.* 2. *p.* 178, (& R. spathulata, *in herb. acad. Philad.*) R. discolor, *Ell. sk.* 2. *p.* 454. (In his note, instead of "to the preceding species," *to R. fulgida*, should doubtless be read.)

γ. slender; upper part of the stem and the leaves minutely strigose-pubescent; the latter spatulate, acute, mostly entire, much attenuate at the base, only the lowest somewhat clasping; involucre shorter than the rays.—R. spathulata, *Michx.! fl.* 2. *p.* 144; not of *Pursh*, nor of *Nutt. gen.*, ex spec. in *herb. Muhl.!* which appears to be Dracopis.

δ. stem stouter, often simple; leaves lanceolate or linear-lanceolate, mostly entire, clothed with loose or spreading (and at length somewhat deciduous) hirsute or hispid hairs. (Pubescence somewhat strigose; rays about the length of the involucre.—R. discolor, *Pursh! fl.* 2. *p.* 574.—Hairs often slender from a papillose base; heads large; rays exceeding the involucre.—R. discolor, *DC. l. c.*)

Dry soil, Pennsylvania to Georgia! and Florida! (*α.* & *β.*) *γ.* Mountains of Carolina, *Michaux!* Lincolnton, N. Carolina, *Mr. Curtis!* (a smoother dwarfish state of var. *α.* growing apparently in shade.) *δ.* Florida! to Western Louisiana! and Arkansas! Aug.–Oct.—Stem 1–3 feet high. Rays about 12, 2–3-cleft at the apex, deep orange-yellow, the lower surface and the base in dried specimens often reddish-orange.—Resembles R. hirta in some of its forms, and like that species variable in the size of its heads and rays; but generally distinguished by the short rays, the leaves more or less tapering below and dilated at the insertion, with a shorter pubescence, and always different in the very short and obtuse appendages of the style, and dark purple (instead of dull purplish-brown) disk.

4. *R. speciosa* (Wender): stem hirsute or hispid, loosely branched; the branches elongated, naked above; leaves roughish-hirsute or pubescent, coarsely and irregularly toothed or incised; the upper lanceolate, sessile; the lower ovate or ovate-lanceolate, acute or acuminate at both ends, petioled, triplinerved; the radical 5-nerved, on long petioles; scales of the involucre linear-lanceolate, unequal, about half the length of the numerous spreading elongated rays; chaff of the receptacle oblong-linear, mostly acute and glabrous, rather shorter than the corolla; pappus coroniform, minute.—"*Wender in flora* (1829), 1. *p.* 30"; *Schrad! in herb. DC.* 1832; *DC.! prodr.* 5. *p.* 556. R. fulgida, *Nutt.! herb.*; *Sullivant! cat. Ohio pl. &c.* (Varies, with

the upper leaves elongated lanceolate, closely sessile, with one or two large laciniate teeth or lobes on each side near the middle, the uppermost entire; as in the cultivated plant, and in specimens from the valley of the Susquehannah, Pennsylvania, *Dr. Sartwell!*; or with the upper leaves shorter and ovate-lanceolate or oblong, all but the uppermost narrowed at the base or petioled.)

Mountains of Pennsylvania! to Ohio, *Dr. Paddock! Mr. Sullivant! Mr. Lea!* where it appears to take the place of R. fulgida. Not uncommon in European gardens. Aug.–Oct.—This is a larger plant than R. fulgida, with showy heads terminating the long naked summit of the branches; the black-purple disk conoid-globose in fruit and two-thirds of an inch long; the oblong-linear rays bright yellow, an inch to an inch and a half long; the thin leaves 3 to 6 inches in length; the radical less toothed, and somewhat resembling those of the common Plantain.

5. *R. triloba* (Linn.): hirsute, paniculately branched; the branches spreading; cauline leaves sessile, more or less hairy; the uppermost ovate-lanceolate, slightly clasping, sparingly serrate or entire; the lower mostly 3-lobed, tapering at the base, coarsely serrate, acuminate; the radical on slender petioles, ovate or oval, obtuse, often subcordate, crenate-toothed, sometimes lobed or incised; heads (rather small) on short peduncles; scales of the involucre lanceolate-linear, unequal, usually shorter than the (mostly 8) oval or oblong spreading rays; chaff of the receptacle glabrous, lanceolate-oblong, cuspidate-awned, as long as the corolla; pappus coroniform, obsolete.—*Linn.! spec.* 2. *p.* 907; *Michx.! fl.* 2. *p.* 144 (excl. *β.*); *Ell. sk.* 2. *p.* 452; *Bot. reg. t.* 525; *Bart. fl. Amer. Sept.* 1. *t.* 24; *DC.! l. c.* R. triloba, subtomentosa (as to herb.), & aristata, *Pursh! fl.* 2. *p.* 575. Centrocarpha triloba (excl. syn. *Michx.*) & aristata, *Don, in Sweet, Brit. fl. gard. ser.* 2. under *t.* 87. Peramibus hirtus, *Raf.! in ann. nat.* (1820,) *p.* 14.

β. pinnatiloba: slender; earliest radical leaves roundish-oval (small), crenate, sometimes lobed; the others irregularly pinnatifid with the lobes short and obtuse: lower cauline leaves pinnately 5–7-lobed or parted; the upper 3-lobed or entire; heads small.—R. biennis, *Chapman! mss.*

Dry soil, Virginia! to Alabama! and Ohio! Illinois! &c., to Louisiana! *β.* Lime rocks, Middle Florida, *Dr. Chapman!* July–Sept.—Plant 3–5 feet high (probably biennial?), the conical receptacle exhaling a faint aromatic odor when divided. Disk black-purple, or dark chesnut, less than half an inch in diameter, at first depressed-globose, when old somewhat ovoid. Rays deep yellow, in dried specimens often orange towards the base, 6–12 lines long.—Well distinguished by the slender (dark-purple) cuspidate points of the chaff. In Pursh's character of R. aristata, the chaff of the *pappus* is said to be awned.

† † Chaff pale and often bearded or canescent at the summit, mostly shorter than the expanded corolla; the disk therefore at first fuscous, at length brownish or dull purple.

6. *R. subtomentosa* (Pursh): stem branching, tomentose-pubescent; leaves mostly petioled, hispid-scabrous above, soft and minutely tomentose beneath; the lower 3-parted or deeply 3-lobed; the upper mostly undivided, ovate or ovate-lanceolate, acuminate, serrate; heads somewhat corymbose; scales of the involucre numerous, narrowly lanceolate, canescent, imbricated, at length squarrose or reflexed, rather shorter than the subglobose brownish disk, many times shorter than the numerous spreading rays; chaff of the receptacle glandular-bearded at the obtuse (rather pale) summit, shorter than the corolla; pappus coroniform, obsolete.—*Pursh, fl.* 2. *p.* 575, ex char. & syn. (not of *herb.?*) R. triloba *β.* foliis subtomentosis, *Michx.! fl.* 2. *p.* 144. R. odorata, *Nutt.! in jour. acad. Philad.* 7. *p.* 78, not of the gardens.

Prairies and copses, (Mountains of Virginia?) Illinois! to Arkansas! Western Louisiana! and the borders of Texas! July–Aug.—Plant rather stout and with a coarse habit, 2–4 feet high; the receptacle when bruised, and perhaps also the leaves, exhaling an anisate or vanilla-like odor, much as in Lepachys. Leaves 3–5 inches in length; the lower ones sometimes undivided and the upper occasionally 3-lobed; but usually the lower ones only 3-parted or divided; the lateral lobes smallest, lanceolate; the terminal ovate-lanceolate or ovate, acuminate, serrate. Peduncles short. Rays, 10 to 12, or rarely 20, 10–15 lines long, bright yellow.

7. *R. mollis* (Ell.): stem hirsute-villous, branching; leaves sessile and partly clasping, oblong, obscurely serrate, tomentose-canescent on both sides, the lower ones somewhat spatulate; heads rather large; scales of the involucre numerous, linear-lanceolate, villous, reflexed about half the length of the rays; chaff linear, canescent at the summit, rather obtuse, as long as the purple corolla; achenia (small) minutely 4-toothed at the summit.—*Ell.! sk.* 2. *p.* 453; *DC.! prodr.* 5. *p.* 556. R. spathulata, *Pursh! fl.* 2. *p.* 574, not of *Michx.*

Western districts of Georgia, *Bartram! Baldwin! Elliott!* &c. Aug.–Oct.—Plant 2–3 feet high, canescent throughout; the branches simple and terminated by a single head. Leaves 12–15 lines long, soft. Rays 15–20, usually an inch long, pale yellow, but deep yellow at the base. Achenia scarcely half the length of the narrow chaff, exactly 4-sided; the angles produced into indistinct and minute obtuse teeth.

8. *R. Heliopsidis:* stem simple from a prostrate rhizoma, somewhat pubescent with appressed hairs, terete, bearing 3–6 slender angled branches or peduncles near the summit; leaves somewhat distant, ovate or oval, slightly serrate, mostly obtuse, quintuplinerved, glabrous or nearly so, abruptly contracted, the lower into long and slender, the upper into short petioles; scales of the involucre oblong or somewhat spatulate, minutely pubescent, at length squarrose, shorter than the subglobose brownish purple disk, and much shorter than the (10–12) oblong-linear spreading rays; chaff of the receptacle obtuse, canescent-pubescent at the summit, about the length of the corolla; achenia of the rays triangular and as large as the quadrangular fertile ones; pappus nearly obsolete.

α. almost glabrous; leaves more or less serrate, sometimes acute; involucre much shorter than the disk.

β. stem stouter, pubescent below with spreading, above with appressed hairs; leaves nearly entire, obtuse.

Pine woods, &c. *α.* Columbus, Georgia, *Dr. Boykin! β.* Cherokee country of Alabama, in wet places, *Mr. Buckley!* Aug.–Sept.—Stem about 2 feet high. Lower leaves 2–3 inches long, 1–2 broad, on petioles 2–6 inches long, which in *β.* are hairy, pale beneath, dull above. Rays scarcely an inch long, pale yellow, in *β.* presenting an abortive style. Involucre and disk exactly resembling some forms of Heliopsis lævis, except that the latter is brownish-purple: the achenia of the rays perfectly formed, and often larger than the fertile fruit, but not ovuliferous.

9. *R. alismæfolia:* glabrous; stem simple or sometimes branched, angled, smooth below, scabrous towards the long and naked striate-furrowed summit, terminated by large solitary heads; leaves (often membranaceous) somewhat scabrous, oval, obtuse or slightly pointed, entire or sparingly repand-toothed, 3–5-nerved and reticulate-veined; the radical and lower cauline tapering by a cuneate base into slender petioles; the uppermost cuneiform-obovate, nearly sessile; scales of the involucre linear, mostly shorter than the ovoid-globose brownish disk, and much shorter than the (12–15) drooping rays; chaff of the receptacle rather obtuse, canescent at the summit, a little shorter than the corolla; pappus coroniform, conspicuous, unequally crenate-toothed.

Plains and pine woods, Western Louisiana, especially on the borders of Texas, *Dr. Hale! Dr. Leavenworth! Dr. Carpenter!* Texas, *Drummond!* June–Aug.—Plant 2–3 feet high, rather slender. Lower leaves 3–6 inches long, 2–3 wide, usually nearly entire, strongly ribbed and beautifully reticulated between the ribs, sprinkled with minute resinous dots, sometimes membranaceous and nearly smooth; the upper all similar in form but smaller and on shorter petioles, or the uppermost sessile. Heads smaller than in R. grandiflora; the broadish rays an inch or more in length: the chaff, corolla, pappus, &c. very similar; the latter perhaps more conspicuous, as long as the proper tube of the corolla.—Closely allied to the following species.

10. *R. grandiflora* (Gmel., DC.): scabrous-hispid throughout; stem simple or branching, striate-angled; the branches naked above, and terminated by solitary (very large) heads; leaves rigid, very rough; the radical and lowest cauline ovate or oval, somewhat serrate or entire, 7-nerved and reticulate-veined, on long petioles; the upper lanceolate, unequally and sharply denticulate-serrate, acuminate at each end, 3–5-nerved, on short petioles, the uppermost sessile; scales of the involucre numerous, linear, shorter than the ovoid-globose purplish-brown disk, and many times shorter than the numerous (20 or more) drooping rays; chaff of the receptacle rather acute, somewhat canescent at the summit, shorter than the corolla; pappus coroniform, crenate or unequally toothed, conspicuous.—*DC. prodr.* 5. *p.* 556. R. nudicaulis, *Nutt. mss.*, not of *Pers.* Centrocarpha grandiflora, *Don, in Sweet, Brit. fl. gard. ser.* 2. *t.* 87.

Dry plains, &c., Red River, Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth!* July–Sept.—Stem stout, 2–3 feet high, thickly clothed, like the both surfaces of the leaves, with short and very rough hispid hairs. Leaves with strong nerves, or rather ribs, running from the base to the apex; the upper 4–6 inches long, an inch or less wide; the lowermost sometimes 8 inches long and 3–4 broad. Heads in the cultivated plant sometimes "nearly 6 inches across"; the rays in our indigenous specimens 2 inches long, golden yellow, minutely tomentose-pubescent beneath. Receptacle narrowly conical.—The character given by De Candolle, which is chiefly taken from that of Don, is incorrect in several particulars: the pappus is not very short, but large for a Rudbeckia; the rays are not hispid beneath, nor is the chaff pungent, or even pointed, in this, or in any of Prof. Don's species of Centrocarpha, except R. triloba.

* * * *Disk greenish-yellow, conical, somewhat prolonged when mature; the receptacle at length columnar or spiciform: chaff navicular, truncate, somewhat bearded at the summit, not longer than the prismatic achenia: branches of the style truncate, slightly thickened and bearded at the summit.*

11. *R. laciniata* (Linn.): glabrous; stem tall, branching; leaves minutely hairy and scabrous, particularly on the margins; the radical and lowermost pinnately (5–7-) divided, the divisions 3-lobed or incised, sometimes laciniate; upper leaves irregularly 3–5-parted, with the segments lanceolate or ovate-lanceolate, acuminate, often toothed, or incised; the uppermost simple, lanceolate or ovate, incisely toothed or entire; heads (rather large) somewhat corymbose-paniculate; rays drooping, about twice the length of the ovate-lanceolate scales of the involucre; achenia prismatic, with a coroniform toothed pappus.—*Linn.! hort. Cliff.*, *& spec.* 2. *p.* 906; *Michx.! fl.* 2. *p.* 144; *Willd.! spec.* 3. *p.* 2247; *Pursh! fl.* 2. *p.* 575; *Ell. sk.* 2. *p.* 451; *Bart. fl. Amer. Sept.* 1. *t.* 16; *Darlingt. fl. Cest. p.* 481; *DC.! prodr.* 5. *p.* 555.

β. leaves glabrous, the upper ones undivided.—R. lævigata, *Pursh! fl.* 2. *p.* 574, not of *Nutt.*

γ. divisions of the radical and lower leaves pinnatifid.—R. digitata, *Mill.*

dict.; Ait. Kew. (*ed.* 1) 3. *p.* 251; *Willd.! enum.* 2. *p.* 921; *Pursh! l. c.*; *Ell. l. c.*; *DC.! l. c.* R. laciniata β. angustifolia, *Pers. syn.* 2. *p.* 476. R. lævis, *Hoffm.*, ex *DC.*

Moist thickets, Canada! to Alabama! Western Louisiana! and to near the sources of the Missouri! July–Sept.—Stem 4–8 (in β. 3–4) feet high. Rays bright light yellow, oblanceolate, 1–2 inches long. Radical leaves scabrous on both sides; the divisions and segments often long and very narrow, sometimes rhombic-ovate.—The var. β. is common in the mountains of North Carolina.

12. *R. heterophylla*: cinereous-pubescent; leaves minutely tomentose beneath, scabrous above; the lower petioled, pinnately 3–5-parted or divided, the oblong divisions sparingly toothed, the terminal one cuneiform and mostly 3-cleft; the upper simple, ovate, slightly petioled, strongly serrate, acute; heads somewhat corymbose; rays drooping; achenia prismatic, with a short coroniform denticulate pappus.

Middle Florida, *Dr. Chapman!*—Plant smaller in all its parts than R. laciniata, with the upper leaves evenly dentate-serrate throughout. Disk globose, and the receptacle conical, perhaps elongated when old. Chaff cuneiform-oblong, minutely canescent at the summit, slightly pointed. Pappus shorter than in R. laciniata.

§ 2. *Scales of the involucre few; the exterior spreading, the innermost erect, similar to the chaff of the spiciform elongated receptacle: the disk at length columnar: rays with abortive achenia: branches of the style terminated by a very short and obtuse cone: achenia of the disk as long as the obtuse chaff, acutely 4-sided; the pappus continuous with its summit, sheathing the lower portion of the corolla, irregularly toothed or lacerate-denticulate; that of the ray small with a short coroniform pappus.*—MACROCLINE.

13. *R. maxima* (Nutt.): very smooth and glabrous throughout, somewhat glaucous; leaves large, membranaceous, broadly oval or ovate-oblong, crenate-denticulate or entire, feather-veined and reticulated, the radical and lower cauline petioled; the upper clasping, either tapering at the base or cordate; head usually solitary on a long peduncle; rays large, drooping; chaff pubescent at the summit.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 354.

Plains of Red River, *Nuttall!* Moist pine woods and along shady streams, Western Louisiana, Arkansas, and Texas, *Dr. Leavenworth!* and near Alexandria, Louisiana, *Dr. Hale!* June–Aug.—Stems 4–9 feet high, "growing in extensive masses" (*Nutt.*), stout, striate. Leaves 8–10 or 12 inches long, and 4–5 broad, "but little inferior in size to those of the Cabbage" (*Nutt.*), obtuse or slightly acuminate; the numerous veins diverging from the strong midrib, reticulated, the upper ones usually converging to the apex. Rays 10–15, usually 2 inches in length, oblong-linear, bright yellow, much longer than the linear scales of the involucre. Disk fuscous, at length frequently 1½ to 2 inches in length, and columnar, 9 to 10 lines in diameter; the receptacle a narrow cylindrical and pointed rachis. Corolla of the disk brownish-purple; the teeth erect. Style with a large bulb at the base. Achenia 3 lines long, usually somewhat compressed; the pappus perfectly continuous with the summit of the achenium and of the same texture, becoming scarious at the summit, sometimes nearly half as long as the immature achenium itself and including the lower half of the corolla, but often shorter.—This and the following species might be considered as a separate genus with nearly the same reason as Dracopis, which they closely resemble in their receptacle, involucre, &c.: but as to the pappus they do not greatly differ from Rudbeckia alismæfolia; and R. laciniata has a similar, although less elongated receptacle.

14. *R. nitida* (Nutt.): very smooth and somewhat shining; stem simple or sparingly branched above; leaves coriaceous, oval-oblong and lanceolate, nervose and reticulated, repand-denticulate or entire, mostly acute at each end; the radical and lower cauline tapering into slender usually margined petioles, the uppermost (often linear-lanceolate) partly clasping; rays large, drooping; chaff pubescent at the summit.—*Nutt.! in jour. acad. Philad.* 7. *p.* 78. (1834.) R. glabra, *DC. prodr.* 5. *p.* 556?
Georgia and Florida, on the borders of swampy open thickets, *Nuttall!* Prairies, Louisiana, *Dr. Leavenworth! Dr. Carpenter! Dr. Hale!* Texas, *Drummond!* June–July.—Plant 3–5 feet high, much resembling the preceding, but with more nervose smaller leaves (the lower 4–6 inches long, 1–3 wide), beautifully reticulated between the nerves or ribs, &c. Stem either simple, with a solitary head on a long naked peduncle, or branched above, producing several heads. Heads nearly as large as in the preceding, with 8–12 rays; the disk sometimes broadly conical and apparently unchanged in fruit; but commonly elongated like the preceding, and sometimes attaining the length of 2 inches.—Both these species would be very showy in cultivation.

§ 3. *Involucre and chaff as in* Macrocline: *rays none! (always?): corolla of the conical-oblong disk nearly destitute of proper tube (the stamens inserted into the very base): branches of the style slightly dilated upwards, truncate-capitate: achenia prismatic: pappus coroniform and somewhat toothed, nearly as in* R. laciniata.—ACOSMIA, Nutt.

15. *R. occidentalis* (Nutt.): smooth and glabrous; stem stout; leaves ovate-lanceolate, acuminate, entire or repandly toothed, sometimes irregularly lobed, scabrous on the margin, 3-nerved; the uppermost sessile, lanceolate, entire; heads few, on long peduncles; disk conical; scales of the involucre lanceolate, acuminate, nearly in a single series. *Nutt.! in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 355.
Rocky Mountains, and woods of Oregon, particularly in the Blue Mountain range, by small streams, *Nuttall!*—Plant about 3 feet high. Leaves ample, somewhat reticulated as in the preceding. Disk purplish-brown, probably elongated in fruit.—Apparently the only species west of the Rocky Mountains.

R. asperrima, Hornem. (*Loud. hort. Brit.*)
R. cicutæfolia, Spreng. is founded on Heliopthalmum cicutæfolium, *Raf. fl. Ludov.*

92. LEPACHYS. *Raf. in jour. phys.* 1819, *p.* 100; *Less. syn. p.* 225.

Lepachys & Ratibida, *Raf. l. c.*—Obeliscaria, *Cass.* (1825), *DC.*

Heads many-flowered; the ray-flowers few, in a single series, neutral; those of the disk small, tubular, perfect. Scales of the involucre few, linear or subulate, spreading, or sometimes with an inner series of small obtuse scales similar to the chaff of the receptacle. Receptacle elongated, columnar or spiciform; the chaff truncate or obtuse, thickened and bearded or villous at the summit, nearly the length of the disk-flowers and partly enclosing or embracing the achenia. Corolla of the disk short, cylindrical, with 5 short recurved teeth; the proper tube none; the stamens therefore inserted into the very base of the corolla. Achenia of the ray 3-angled, hairy, abortive; of the disk compressed, glabrous or ciliate, with a wing-like margin on one or both sides, which is more or less produced into a tooth at the summit; the areola at the base somewhat lateral.—Perennial usually branching strigose-scabrous herbs (natives of North America, chiefly of the region between the Mississippi and the Rocky Mountains); the striate-sulcate stems or branches naked above, and terminated by single showy heads. Leaves alternate, pinnately parted or divided; the divisions narrow, sometimes again pinnatifid. Rays spreading or drooping, yellow, sometimes partly or entirely orange-brown. Disk cylindrical, exhaling a fragrant anisate odor when bruised, the apex of the chaff canescent; the corolla, anthers, and branches of the style fuscous.

De Candolle, who has by mistake given the year 1829, instead of 1819, as the date of Rafinesque's memoir (which is however elsewhere correctly cited), has thence adopted Cassini's name of Obeliscaria, doubtless upon the supposition of its priority. Cassini passed by Rafinesque's name, because, as he states, he could not ascertain what plant that author had in view: the character is certainly not altogether correct; but Rafinesque mentioned Rudbeckia pinnata as the type of his genus. We feel obliged, therefore, to follow Lessing, and retain the name of Lepachys for this genus; which, although well marked in habit and character, must be divided into as many sections or subgenera as there are species. L. pinnata approaches nearest to the original Rudbeckia, viz: R. laciniata.

§ 1. *Achenia quadrangular-compressed; the inner margin very obscurely winged, the summit obsoletely and obtusely 2-toothed, naked: appendages of the style lanceolate, acute, barbellate-hispid.*—OBELISCARIA, Cass. (Lepachys, *Raf.*)

1. *L. pinnata:* scabrous and pubescent with minute strigose hairs; leaves pinnately divided; the divisions 3–7, lanceolate, acute or acuminate at each end, sparingly serrate-toothed or entire; the uppermost undivided; disk oval-oblong, much shorter than the rays.—L. pinnatifida & angustifolia, *Raf.! l. c.* Rudbeckia pinnata, *Vent.! hort. Cels. t.* 71; *Michx.! fl.* 2. *p.* 144; *Smith, exot. bot.* 1. *t.* 38; *Bot. mag. t.* 2310; *Willd.! enum.* 2. *p.* 921; *Pursh! fl.* 2. *p.* 576. R. digitata, *Willd.! spec.* 3. *p.* 2247, excl. syn. *Moris. & Ait.* R. tomentosa, *Ell.! sk.* 2. *p.* 453, excl. syn. R. odorata & cinerea, of the gardens. Obeliscaria pinnata, *Cass. in dict. sci. nat.* 46. *p.* 401; *DC.! prodr.* 5. *p.* 558.

Dry prairies and plains, from Western New York (*Dr. Sartwell!*) and Pennsylvania (*Muhlenberg!*) Iowa! and Michigan! and throughout the Western States to Louisiana! the western part of Georgia (*Baldwin! Elliott!*) Alabama (*Mr. Buckley!*) and Middle Florida, *Dr. Chapman!* June–Sept.—Plant 3–4 feet high. Divisions of the leaves varying from oblong-lanceolate and coarsely toothed, to narrowly lanceolate-linear and entire; the terminal & superior divisions largest, often confluent. Rays bright yellow, 1½ to 2½ inches long, varying from 3 or 4 to 8 or 9 lines in breadth. Chaff 3-nerved; the lateral nerves colored. Achenia when young exhibiting a narrow indistinct wing on each margin, which is slightly produced beyond the summit, so that the achenium is obscurely 2-toothed.

§ 2. *Achenia much compressed; the inner margin evidently winged and slightly ciliate; the summit somewhat 1–2-toothed, and crowned with an ob-*

scure lacerate fringe: branches of the style flattish, terminated by a very short truncate or obscurely conical barbellate appendage.—RATIBIDA, Raf., Don. (Obeliscaria § Ratibida & Monodonta, *DC.*)

2. *L. columnaris:* strigose-scabrous, mostly branched from the base; radical (primordial) leaves undivided, spatulate-lanceolate; the cauline pinnately parted, the upper sessile; segments linear-lanceolate or oblong, rigid, mucronulate, entire, rarely somewhat lobed; disk columnar, in fruit longer than the 5–8 oblong or obovate-oval recurved yellow rays.—Rudbeckia columnaris, *Pursh! fl.* 2. *p.* 575; *Bot. mag. t.* 1601; *Nutt.! gen.* 2. *p.* 178; *Hook.! fl. Bor.-Am.* 1. *p.* 311. R. columnifera, *Nutt. in Fras. cat.* Ratibida sulcata, *Raf. in jour. phys. l. c.* R. columnaris, *Don, in Brit. fl. gard. ser.* 2. *no.* 361. Obeliscaria columnaris, *DC.! prodr.* 5. *p.* 559.

β. *pulcherrima* (Don): rays wholly or in part brown-red.—Varies, like var. α. with the segments somewhat oblong or narrowly linear-lanceolate, either entire (*Don, in Brit. fl. gard. l. c. t.* 361); or the narrowly linear divisions of the leaves again irregularly pinnatifid, the rays also yellow at the apex (Obeliscaria pulcherrima, *DC.! l. c.*); or the rays entirely brown-red, with the columnar disk variable in length (Rudbeckia Tagetes, *James! in Long's exped.* 2. *p.* 68. Obeliscaria Tagetes, *DC. l. c.*), occasionally subglobose, the peduncles shorter. R. globosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 19. R. columnaris, *Torr.! in ann. lyc. New York*, 2. *p.* 215.

Plains of the Upper Missouri, *Bradbury! Nuttall!* also between the Missouri and Mississippi, and on St. Peter's River, *Mr. Nicollet!* to Saskatchawan, *Drummond!* extending to the Rocky Mountains, *Douglas!* β. With the preceding, *Nuttall, Mr. Nicollet!* Upper Arkansas, *Dr. James!* to Texas, *Drummond!* and *Berlandier!* July–Aug.—Plant 10 inches to 2 feet high. Leaves crowded or somewhat distant; the segments variable: the rays an inch long, and sometimes nearly as broad. Chaff with woolly tips and mostly ciliate on the margins, near which is an oblong purple spot. Wing of the achenia (anterior) terminated by a short acute membranaceous tooth, which is sometimes obsolete; the exterior margin obscurely if at all winged, but sometimes very slightly toothed at the summit.—The specimens collected in Mr. Nicollet's expedition entirely justify the union of the varieties with red-brown or particolored rays to the yellow R. columnaris. Both forms vary with the disk an inch or more in length, and in starved specimens reduced to half, or even one-third of an inch, when it is nearly globose. The specimens of Dr. James belong to a dwarf, much branched and leafy plant, with short peduncles.

§ 3. *Achenia much compressed, 2-winged and conspicuously 2-toothed or 2-awned (the summit and the teeth obscurely bearded); the wings strongly fimbriate-ciliate: branches of the style terminated by a lanceolate acute barbellate-hispid appendage.*—LOPHOCHÆNA.

3. *L. peduncularis:* stem simple or branching near the base, leafy and hirsute below; leaves hirsute or strigose, bipinnately parted; the ultimate segments short, obtuse; peduncles naked, very long; disk columnar, twice or thrice the length of the rays; chaff sparsely ciliate, slightly bearded at the summit.

Texas, *Drummond!*—Root fusiform. The leafy portion of the stem 6–8 inches; the naked peduncle 12–16 inches in length. Radical leaves unequally pinnately divided; the divisions numerous, oblong or cuneiform, incised or pinnatifid; the upper leaves regularly pinnatifid, with narrow segments. Disk an inch and a half or more in length, cylindrical. Exterior scales of the involucre very few, subulate; the interior much shorter, resembling the chaff of the receptacle. Rays linear-oblong, yellow. Chaff with a bright purple spot near each margin. Achenia (immature) flat, oval, 2-winged; the inner wing broader, and more conspicuously fringed with stout spreading bristles; the summit produced into 2 sharp slightly unequal teeth or awns, which are fully half the length of the corolla, and confluent with the wings, in the manner of Silphium.

93. DRACOPIS. *Cass. dict.* 35. *p.* 273; *DC. prodr.* 5. *p.* 558.

Heads many-flowered; the ray-flowers neutral, in a single series; those of the disk tubular, perfect. Scales of the involucre in 2 series; the exterior 6–8, small, linear, spreading; the interior very small, appressed, resembling the chaff of the receptacle. Receptacle cylindrical, pointed; the chaff linear, somewhat bearded at the summit, abruptly mucronulate, rather shorter than the flowers. Corolla of the disk with a manifest tube; the throat expanded, 5-toothed, the teeth reflexed. Branches of the style terminated by a linear-lanceolate barbellate appendage. Achenia terete, narrowed towards the base, with a lateral areola, minutely striate and granulated. Pappus obsolete (an extremely minute entire crown or border), or none.—An annual branching glabrous herb; the stem and branches striate-sulcate. Cauline leaves cordate-clasping, oblong or oval, mostly acute, entire, the lower ones serrate, smooth and pale, reticulate-veined; the margins ciliate-scabrous. Heads solitary, peduncled, terminating the branches. Rays yellow, often with an orange-brown spot at the base. Disk (at first somewhat conical, at length cylindrical) fuscous.

D. amplexicaulis (Cass. l. c.)—*Hook. bot. mag. t.* 3716, *& compan.* 1. *p.* 99. Rudbeckia amplexicaulis, *Vahl, in act. Hafn.* 2. *p.* 29, *t.* 4; *Schkuhr, handb.* 3. *t.* 259. R. amplexifolia, *Jacq. ic. rar.* 3. *t.* 592; *Willd.! spec.* 3. *p.* 2249; *Pursh! fl.* 2. *p.* 573. "R. perfoliata, *Cav. ic.* 3. *p.* 27, *t.* 252." R. spathulata, *Nutt. gen.* 2 *p.* 178, ex *Muhl. herb.!*

Low prairies, &c., Louisiana! Arkansas! and Texas! (Also in Mexico according to Cavanilles.) May–Aug.—Stem 1–3 feet high. Rays cuneiform-oblong, 2–3-toothed, 6–10 lines long. Disk at length about an inch long. Anthers fuscous. Branches of the style purple.

94. GYMNOPSIS. *DC. prodr.* 5. *p.* 561.

Gymnolomia, *H. B. & K.*—Aldama, *Lallav. & Lex.?*

Heads many-flowered; the ray-flowers in a single series, neutral; those of the disk tubular, perfect. Scales of the involucre in a double series, the exterior somewhat foliaceous. Receptacle flat or convex, or perhaps conical, chaffy. Branches of the style with long appendages. Achenia crowned with a very short coroniform-toothed pappus.—Herbaceous or somewhat shrubby (American) plants, with opposite petioled 3-nerved or triplinerved leaves. Heads pedunculate. *DC.*

1.• *G. uniserialis* (Hook.): stem erect, scabrous, branching, somewhat dichotomous; leaves oblong-ovate, petioled, angulate-toothed, obsoletely punctate and nearly naked above, strigose-hairy beneath; scales of the involucre oblong-spatulate, hirsute, in a single series; chaff of the receptac, leincluding the very glabrous and shining achenia, at length tuberculate and scabrous, tubular; pappus coroniform, fimbriate. *Hook.! ic. pl. t.* 145; *DC. prodr.* 7. (*mant.*) *p.* 289.

Texas, *Drummond!*—Plant strigose-hirsute; the stems apparently 2 feet or more in height. Leaves ovate-lanceolate; the uppermost alternate. Rays rather large, bright yellow, oblong. Disk-flowers about 30; the corolla (yellow) slightly dilated upwards, with 5 elongated and very narrowly linear lobes. Stamens inserted near the base of the corolla; anthers brownish, tipped with a slender lanceolate appendage. Appendages of the style very long, hirsute, filiform-linear. The edges of the chaffy scale which encloses each achenium at length cohere firmly.—Nearly allied apparently to G. dentata and G. Schiediana of De Candolle; but the genus seems to include incongruous plants.

95. ENCELIA. *Adans.; Cav. ic.* 1. *t.* 61; *DC. prodr.* 5. *p.* 566.

Heads many-flowered; the ray-flowers neutral, in a single series; those of the disk tubular, perfect. Involucre somewhat imbricated in 2–3 series, equalling the disk. Receptacle flat: the chaff membranaceous, navicular. Branches of the style terminated by a cone. Achenia compressed, flat, emarginate, destitute of pappus, with the margins densely woolly or villous. —Shrubby plants of the Pacific coast of America, more or less canescent; the leaves alternate, ovate or oblong, petioled, entire or nearly so. Heads few, terminating the paniculate branches. Ray and disk yellow.

1. *E. Californica* (Nutt.): erect, much branched; the branches puberulent-canescent; leaves lanceolate-ovate, acute, sometimes angular-toothed at the obtuse or rounded base, abruptly petioled, 3–7-nerved, nearly glabrous, the margins scabrous; involucre very villous; achenia nearly glabrous except the margins, which are very densely villous-hirsute.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 357.

Dry hills, near St. Barbara [or St. Diego], *Nuttall!* April.—A low, rather showy, brittle shrub, with the scent of Calendula or Gaillardia.

96. VIGUIERA. *H. B. & K. nov. gen. & spec.* 4. *p.* 224, *t.* 379; *DC. prodr.* 5. *p.* 578.

Heads many-flowered; the ray-flowers few, neutral; those of the disk perfect. Scales of the hemispherical involucre nearly in a single series, somewhat equal, with foliaceous tips or appendages. Receptacle either conical or flattish; the persistent chaff embracing the achenia. Appendages of the style subulate, hispid. Achenia obovate-cuneiform, pubescent. Pappus of 4 small denticulate squamellæ and 2 awns, deciduous.—Annual or perennial (W. Indian, Mexican, and Texan) herbs; with alternate or opposite leaves, and small heads with yellow rays.

Viguiera prostrata, *DC.* is not a North American plant; and is perhaps different from Helianthus prostratus, *Willd.*

1. *V. Texana:* **stem hairy, sparingly branched; leaves alternate (the lowest opposite), rhomboid-ovate, acuminate, sparingly serrate, triplinerved, appressed-pubescent, somewhat scabrous above, abruptly contracted into long villous petioles; peduncles solitary or subcorymbose; scales of the involucre villous-canescent, in 1–2 series, with linear foliaceous appendages; chaff of the nearly flat receptacle membranaceous, ovate, cuspidate; rays 8–10; achenia appressed-pubescent.**

Texas, *Drummond!*—Root and base of the stem unknown. Leaves 4–5 inches long, 2–3 broad, membranaceous; the lower petioles 2 inches in length. Appendages of the involucral scales longer than the ovate-oblong appressed portion; or those of the inner series, when present, shorter. Chaff scarious, with a short rigid cusp. Squamellæ of the pappus small, roundish, lacerate-fimbriate: awns rather shorter than the achenia, dilated and lacerate-denticulate near the base.—Apparently near V. laxa, *DC.*

97. HELIANTHUS. *Linn.; Schkuhr, handb. t.* 258; *Less. syn. p.* 229.

Helianthus & Harpalium, *Cass., DC.* excl. § Harpalizia?

Heads many-flowered; the ray-flowers several or numerous, neutral; those of the disk perfect. Involucre imbricated in 3 or more series; the scales with or without foliaceous tips or appendages. Receptacle flat or convex; the persistent chaff embracing the achenia. Corolla of the disk commonly 10-nerved, with a short proper tube. Branches of the style hispid, terminated by a subulate-conical appendage. Achenia 4-sided or mostly compressed, not winged or margined. Pappus of 2 chaffy scales or awns, arising from the principal angles of the achenia, and often with 2 or more smaller intermediate scales or squamellæ, very deciduous.—Annual or perennial (chiefly North American) mostly rough herbs; with opposite, sometimes alternate or scattered, commonly triplinerved leaves. Heads solitary or somewhat corymbose. Rays yellow; the corolla of the disk yellow, or sometimes dark-purple at the summit.—*Sunflower.*

The corolla of the disk in Helianthus is generally 10-nerved, the 5 additional or secondary nerves corresponding with the axis of the laciniæ: in H. mollis there are commonly 10 others, alternating with the former, but they seldom extend to the laciniæ. H. Radula, H. heterophyllus, & H. angustifolius, however, present the ordinary venation of Compositæ (viz. 5 nerves corresponding with the sinuses); and this is occasionally the case in H. longifolius. In H. Nuttallii, we observe a secondary or median nerve in two of the laciniæ only.

* *Annual: heads usually large: rays numerous: receptacle flat: involucre spreading: disk brownish-purple: leaves ovate or cordate, mosty alternate, triplinerved.*—Annui.

H. annuus, the common *Sunflower*, is very generally cultivated, but is no-where naturalized in this country.

1. *H. argophyllus:* **densely lanate; leaves alternate, mostly entire: the lower cordate; the upper ovate, acute, on short petioles; heads axillary and terminal, on short peduncles; scales of involucre ovate, acuminate, woolly; achenia compressed, slightly hairy at the summit; pappus of 2 very deciduous chaffy awns.**

Hecatersima Benth.! [illegible] an annual species & I suspect this ☉. [illegible] California, [illegible]

Texas, *Drummond!*—Apparently a large plant, but the base of the stem unknown, clothed with a very white wool, which on the stem is loose and flocculent, on the leaves appressed. Lowest leaves (radical?) 6–8 inches in diameter, obscurely serrate, on long petioles; the upper 2–3 inches long; the uppermost bearing pretty large heads in their axils, on peduncles which are seldom longer than the leaves. Rays about 20. Inner scales of the involucre lanceolate, all finely acuminate. Chaff of the receptacle 3-cleft at the apex.

2. *H. lenticularis* (Dougl.): stem hispid, branching, stout; leaves hispid-scabrous, alternate, ovate, serrate, obtuse at the base, petioled; the lower often cordate, the uppermost often lanceolate and entire; peduncles terminal, sometimes paniculate; heads very large; scales of the involucre oval or ovate, ciliate, abruptly and conspicuously acuminate; achenia appressed-pubescent, often as long as the corolla of the disk; the latter villous at the base; pappus of 2 lanceolate chaffy awns.—*Dougl. in bot. reg. t.* 1265; *Hook.! fl. Bor.-Am.* 1. *p.* 313; *DC.! prodr.* 5. *p.* 586; *Nutt.! in trans. Amer. phil. soc. l. c.* H. tubæformis, *Nutt. gen.* 2. *p.* 177? H. erythrocarpus, *Bartl. ind. sem. hort. Gœtt.* 1839? (*Linnæa, suppl.* 14. *p.* 125.)

β. corolla of the disk sparsely villous at the base (lower leaves sometimes opposite, and the scales of the involucre narrower).—H. multiflorus, *Hook.! l. c.* partly.

Interior of Oregon, *Douglas, Nuttall!* and from the Platte to Louisiana! Arkansas! and Texas! *β.* Saskatchawan, *Drummond!* Upper Missouri, *Mr. Nicollet!* July–Sept.—A large plant, resembling H. annuus, with a rough hispid (often spotted) stem; the involucre 1–2 inches broad; the rays sometimes 2 inches long and 6–10 lines wide. The stem exudes a resin when wounded. The Indians employ the seeds for food.

3. *H. petiolaris* (Nutt.): stem strigose or hispid, branching; leaves scabrous, alternate (the lower not unfrequently opposite), ovate-lanceolate or ovate, entire or nearly so, on very long petioles; peduncles terminal, naked, bearing solitary (large) heads; scales of the involucre lanceolate, acute or acuminate: corolla of the disk minutely pubescent or canescent at the base; achenia villous; pappus of 2 chaffy awns.—*Nutt.! in jour. acad. Philad.* 2. *p.* 115; *Sweet, Brit. fl. gard.* (*ser.* 2) *t.* 75; *DC.! prodr.* 5. *p.* 586. H. patens, *Lehm.! ind. sem. Hamb.* 1821, *p.* 8? H. integrifolius, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 366.

Upper Missouri, *Nuttall! Mr. Nicollet!* and Arkansas! in arid places. Aug.—Stem erect, 1–3 feet high. Heads, including the (12–20) large rays, 3–4 inches broad. Scales of the involucre narrowly or broadly lanceolate, with a conspicuous acumination, or merely acute. Leaves mostly acute at the base.

4. *H. cucumerifolius*: hispid-scabrous; stem branching; leaves alternate, or the lower opposite, all cordate, acute or acuminate, coarsely serrate-toothed, on slender petioles; peduncles terminal, naked, bearing a single, or 2–4 clustered (sessile) small heads; scales of the involucre narrowly linear-lanceolate, attenuate-acuminate; corolla of the disk glabrous at the base; achenia hairy; pappus of 2 minutely pubescent small chaffy awns.

Texas, *Drummond!* July–Sept.—Lower part of the stem unknown; but apparently a small species; the branches spotted, terminating in a slender peduncle 4 to 10 inches long. Leaves 1–3 inches long, deltoid-cordate, angulate-toothed, both sides very scabrous. Heads half to two-thirds of an inch in diameter, often in a cluster of 2–4 at the apex of the peduncle. Scales of the involucre lax. Rays about 15. Chaff of the receptacle (or middle lobe) produced into a slender acumination. Achenia oblong, clothed with appressed villous hairs.

5. *H. debilis* (Nutt.): somewhat scabrous; stem slender, decumbent, branching; leaves alternate (rarely opposite), deltoid-ovate, mucronate-acute or acuminate, repand-serrulate, on slender petioles; heads (very small for this division) solitary, on slender terminal peduncles; scales of the involucre narrowly lanceolate, attenuate-acuminate, achenia pubescent; pappus of 2 minutely pubescent small chaffy awns.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 367.

β. stem mostly simple, ascending; lower leaves frequently opposite.

Coast of East Florida, *Baldwin!* *β.* Sand hills of Western Louisiana and Texas, *Dr. Leavenworth!*—The root of the Florida plant is unknown; but that of *β.*, which scarcely differs except in the simple stem (1–2 feet long), and a little more attenuate leaves (1½ inch in length), is annual. Involucre about half an inch in diameter. Chaff of the receptacle 3-lobed; the middle lobe cuspidate-acuminate. Rays 10–14.

* * *Perennial: heads small: rays 12–24: receptacle convex: scales of the involucre irregularly imbricated, narrow, at length squarrose, as long as the dark purple disk: leaves opposite, alternate, or scattered, linear, 1-nerved.*—Angustifolii.

6. *H. angustifolius* (Linn.): stem scabrous or hairy; leaves linear, elongated, sessile, entire, with revolute margins, 1-nerved, scabrous above, pale or whitish, and often pubescent or hirsute beneath; the lower opposite, the upper alternate; heads on slender peduncles, somewhat corymbose; scales of the involucre narrowly lanceolate, acute, squarrose in fruit; chaff of the receptacle cuneiform-oblong, 3-toothed; achenia glabrous; pappus of 2 small chaffy awns.—*Linn.! spec.* 2. *p.* 906; *Walt. Car. p.* 216; *Michx.! fl.* 2. *p.* 141 (chiefly); *Pursh, fl.* 2. *p.* 572; *Ell.! sk.* 2. *p.* 415; *Bot. mag. t.* 2051; *Bart. fl. Amer. Sept. t.* 105; *DC.! prodr.* 5. *p.* 587. H. foliis linearibus, & Coreopsis foliis linearibus, &c. *Gronov.! fl. Virg.* "Coreopsis, *Mill. ic. t.* 224, *f.* 2." C. angustifolia, *Linn. spec. ed.* 1. Rudbeckia angustifolia, *Linn.! spec.* (*ed.* 2) 2. *p.* 1281. Leighia bicolor, *Cass.*

Damp pine barrens &c. New Jersey! to Florida! Alabama! Kentucky! Louisiana! and Texas! common. Aug.–Oct.—Stem 2–6 feet high, slender, simple or branched. Leaves 2–6 inches long, 2–4 lines, or the lower half an inch wide, with a prominent midrib. Involucre somewhat scabrous or hairy. Rays 12–20, nearly an inch long. Lobes of the disk-corolla brownish purple. Pappus shorter than the achenia.

7. *H. orgyalis* (DC.): stem tall, very smooth; leaves alternate, sessile, linear [very narrow], flat, scarcely denticulate, 1-nerved, slightly if at all scabrous; heads 5–7, corymbose, on long peduncles; scales of the involucre linear, acuminate, ciliolate; chaff of the receptacle linear-subcuneiform, entire, somewhat ciliate at the apex; achenia glabrous, 2–3–4-awned. *DC.! not.* 7. *pl. rar. Genev. p.* 12, & *prodr.* 5. *p.* 587, excl. syn.

Arkansas, *Mr. Pourtales:* cultivated in the Geneva Botanic Garden!—Stem 6–10 feet high. Leaves very numerous and narrow, 3–6 inches long, 1–2 lines wide; the lower remotely denticulate. Heads rather large. Scales of the involucre lax, very slender, attenuate-subulate, longer than the disk. Rays about 15, an inch or more in length. Pappus of chaffy scales rather than awns, usually 2 large and 2 smaller ones, but the latter are sometimes wanting or confluent with the larger.—This is not the H. angustifolius of Linnæus. The H. giganteus *β.* crinitus, *Nutt. gen.* 2. *p.* 127, perhaps belongs to this species, in which case its geographical range extends to the Missouri: but we find no specimen of Mr. Nuttall's plant in the herbarium of the Academy of Natural Sciences.

* * * *Perennial: rays rarely none: receptacle convex: scales of the hemispherical involucre regularly imbricated, appressed, ovate or lanceolate, destitute of foliaceous tips*

[illegible] Lond Jour Bot: 6. p 247.

or appendages, mostly shorter than the dark purple disk: leaves usually opposite.—Atrorubentes. (Discomela, *Raf.* Harpalium, *Cass.*)

† Rays 7–10, slightly exserted, or frequently wanting! (Echinomeria, *Nutt.*)

8. *H. Radula:* stems simple, often several from the same root, very hirsute below, naked above, bearing a single head; leaves opposite, crowded at the base of the stem, orbicular, obovate, or broadly spatulate, obtuse, entire, 3-nerved or triplinerved, sessile or on short winged petioles, hirsute beneath, hispid above; the upper reduced to lanceolate bracts; scales of the involucre and chaff of the receptacle lanceolate, acuminate, dark-purple; achenia glabrous; pappus of 1–2 small awns, scarcely as long as the proper tube of the corolla.—Rudbeckia Radula, *Pursh! fl.* 2. *p.* 575. R. apetala, *Nutt.! in jour. acad. Philad.* 7. *p.* 77. Helianthus apetalus, *Le Conte! ined.; Torr.! ined.* Echinomeria apetala, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 356.

Damp pine barrens of Georgia! Alabama! and Florida! Aug.–Sept.—Stems erect from a decumbent base, perfectly simple, 1–3 feet high, extremely hirsute below, often glabrous above, and naked, except one or two pairs of bract-like leaves. Lower or radical leaves clustered, 1–3 inches broad, often rounded, nearly or quite sessile, very rough and hispid above. Heads mostly larger than in H. atrorubens; the scales of the involucre oblong-lanceolate, ciliate, about the length of the disk. Rays when present yellow, sometimes slightly tinged with purple. Chaff of the convex receptacle membranaceous, with cuspidate-acuminate brownish-purple tips. Corolla dark-purple; the proper tube nearly as long as the limb! Achenia compressed, the edges slightly produced at the apex so as to appear obscurely 2-toothed.

† † Rays 12–20, elongated.

9. *H. heterophyllus* (Nutt.): stem very slender, simple, sparsely hispid, bearing a single head; leaves opposite, entire, hispid above, smoothish beneath; the radical and lowest cauline oval or elliptical, narrowed at the base or somewhat petioled, obscurely triplinerved; the upper narrowly lanceolate, or linear, sessile; scales of the involucre lanceolate, acuminate, ciliate; chaff of the receptacle acute; achenia glabrous; pappus of 2 slender chaffy awns.—*Nutt.! in jour. acad. Philad.* 7. *p.* 74.

β. lower leaves lanceolate, with a long attenuate base.—H. heterophyllus, *Hook.! compan. to bot. mag.* 1. *p.* 98, partly.

In dry soil? North Carolina! Georgia! and Alabama! *β.* Covington, Louisiana, *Drummond!* Florida, *Dr. Chapman!*—Stem 1–2 feet high, naked and often nearly glabrous above. Radical leaves 1½–3 inches long, about an inch wide, somewhat hairy on the veins beneath; the cauline pairs distant; the lower 2–3, or in *β.* 4–7 inches long, 3–5 lines wide; the uppermost very small. Involucre half an inch in diameter: scales glabrous or pubescent; the exterior oval-lanceolate; the inner narrower and more acuminate. Rays 14–18, large, an inch or more in length. Lobes of the disk-corolla and tips of the chaff brownish-purple. Achenia narrow, when young slightly hairy at the summit. Awns of the pappus lanceolate-subulate, denticulate.

10. *H. atrorubens* (Linn.): stem hirsute and scabrous below, trichotomous or loosely corymbose and naked above; leaves mostly opposite, ovate, oval, or spatulate-oblong, rough and hispid, triplinerved, somewhat serrate, obtuse, abruptly narrowed into margined petioles, the lowest often slightly cordate; scales of the involucre oval or obovate, obtuse, minutely ciliate; chaff of the

receptacle acutish; achenia pubescent at the summit; pappus of 2 squamellate lanceolate awns.—*Linn.! spec.* 2. *p.* 906; *Ait.! Kew.* (*ed.* 1) 3. *p.* 250; *Michx.! fl.* 2. *p.* 140 (in part only); *Ell.! sk.* 2. *p.* 414; not of *Lam.!* of *DC.* ex char., nor of *Hook.!* H. sparsifolius, *Ell.! l. c.* H. silphioides, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 366. Corona-solis minor, &c., *Dill. Elth. t.* 94, *f.* 110.

Dry soil, Virginia! to Florida! Louisiana! and Arkansas! common. Aug.–Oct.—A well-marked species, varying in size (from 1 to 4 feet); the stem bearing 3–5 heads on naked slender peduncles, or several, terminating the very loose paniculate-corymbose branches, clothed with long white hairs towards the base, but often nearly glabrous above. Leaves rather thin, both sides hirsute or hispid, veiny, sometimes nearly entire; the lower 3 to 6 inches long, and 2 to 5 broad; the upper small and in more distant pairs; the uppermost remote and sometimes alternate. Heads small; the 12–16 rays elongated, about an inch long. Involucre rather shorter than the convex disk; the obtuse scales obscurely 3-nerved. Chaff of the receptacle purplish at the tips, entire, or slightly 3-lobed. Corolla of the disk dark-purple at the summit, pubescent at the base of the limb. Pappus of 2 minutely fringed, lanceolate or linear-lanceolate paleæ, rather than awns, one-half to two-thirds the length of the corolla. Achenia glabrous, except the summit.

11. *H. rigidus* (Desf.): stem simple or sparingly branched, rough; cauline leaves opposite, very thick and rigid, lanceolate or oblong-lanceolate, acute or acuminate at each end, subsessile, obscurely serrate or entire, somewhat triplinerved, extremely hispid-scabrous on both sides; the uppermost sometimes alternate; the radical oval, obtuse, strongly triplinerved, petioled; scales of the involucre ovate, mostly obtuse, finely ciliate, numerous, closely imbricated; chaff of the receptacle obtuse; achenia somewhat hairy; pappus of 2 concave lanceolate scales, rather than awns, and frequently with one or several intermediate small scales.—*Desf. cat. hort. Par. ed.* 3. *p.* 184. H. atrorubens, *Michx.! herb.* in part; *Hort. Berol.!* 1839; *Bot. mag. t.* 2668; *Hook.! compan. to bot. mag.* 1. *p.* 98 (var. foliis acutioribus). H. scaberrimus, *Ell.! sk.* 2. *p.* 423; *DC. l. c. p.* 588. H. crassifolius, *Nutt.! in trans. Amer. phil. soc. l. c.* Harpalium rigidum, *Cass. in dict. sci. nat.* 20. *p.* 300; *DC.! prodr.* 5. *p.* 583.

β. branches or peduncles simple, elongated; scales of the involucre ovate-lanceolate or ovate, more acute.—H. diffusus, *Sims, bot. mag. t.* 2020 (poor.) H. Missuricus, "*Spreng. pug. p.* 21;" *Link. enum.* 2. *p.* 352? H. Missouriensis, *Schwein.! herb.*; *Nutt.! in trans. Amer. phil. soc. l. c.* H. atrorubens, *Bot. reg. t.* 508; *Hook.! fl. Bor.-Am.* 1. *p.* 312; *DC. prodr. l. c.* ex char.; not of *Linn.*

Plains and prairies, western part of Georgia, *Elliott!* Illinois, *Mr. Buckley!* and St. Louis, *Drummond!* to the Upper Missouri, *Nuttall! Mr. Nicollet!* Arkansas, *Nuttall!* Louisiana, *Dr. Leavenworth!* and Texas, *Drummond!* *β.* Missouri, *Nuttall!* (spec. cult.) and Saskatchawan, *Drummond!* Aug.–Sept.—Plant stout, 1–3 feet high, rather naked above; the rigid stem hispid with short papillose hairs, often smoothish above: the coriaceous thick leaves (cauline 3–5 inches long, an inch or less wide) very rough with short bristles arising from papillæ, which give the surface a cinereous hue, and often a whitish blistered appearance. Heads few, but showy; the disk about an inch in diameter; the 20–24 rays an inch long. Scales of the involucre regularly and closely imbricated in 3–4 series. Receptacle convex: the chaff entire, ciliate on the back towards the summit. Lobes of the disk-corolla purple: style yellow. Achenia somewhat lenticular, hirsute when young, but more smooth when mature, except the edges and summit. The pappus is variable, even in different flowers from the same individual; consisting either of the two scale-like awns without intermediate squamellæ, or of 1–4 of the latter on each side, or with the squamellæ confluent with the lateral scales, which become dilated and auriculate or lobed at the base, &c. &c.; whence we conclude that Harpalium, *Cass.* is founded upon insufficient and very inconstant characters. The var. β. differs but slightly, and passes completely into the other forms of this well-marked species, so that it hardly merits to be distinguished. In some of the Texan specimens, and in those described by Nuttall as H. crassifolius, the leaves are more attenuated to each end, more serrated, and the upper surface comparatively smooth.—The stem sometimes exudes resin in small quantity.

* * * * *Perennial: rays* 12–24: *receptacle convex: scales of the involucre regularly imbricated, appressed, or with somewhat spreading acute or acuminate* (*inappendiculate*) *tips, equalling the yellow disk: leaves opposite, or the uppermost sometimes alternate.*—Lætiflori.

12. *H. lætiflorus* (Pers.): stem scabrous and branching at the summit; leaves oval-lanceolate, gradually acuminate, serrate, contracted at the base into short petioles, triplinerved, very scabrous on both sides; the uppermost often alternate and nearly entire; heads solitary or somewhat corymbose, on naked peduncles; scales of the involucre ovate-lanceolate, acuminate, ciliate, appressed, about the length of the disk; chaff of the receptacle somewhat 3-toothed or entire; achenia glabrous.—*Pers. syn.* 2. *p.* 476; *DC.! prodr.* 5. *p.* 586, excl. syn. *Ell.* H. atrorubens, *Lam.! dict.* 3. *p.* 86, not of *Linn.*

β. leaves all somewhat entire; chaff of the receptacle 3-toothed.—H. tricuspis, *Ell.! sk.* 2. *p.* 422.

N. America; long cultivated in the French Gardens. In barrens, &c. Indiana, *Dr. Clapp!* Dayton, Ohio, *Dr. Short!* β. Western part of Georgia, *Elliott!* Aug.–Oct.—A stout and showy plant, 3–4 feet high, somewhat trichotomous above. Leaves somewhat coriaceous, 5–8 inches long, 1½–2½ broad, extremely scabrous above, more or less pubescent, but also very rough beneath, copiously feather-veined, the veins anastomosing with the prolonged lateral nerves. Heads few (in the cultivated plant on long naked peduncles); the scales of the involucre resembling those of H. rigidus β., but fewer and more pointed. Rays 12–16, in the cultivated plant 20 or more, showy, often nearly 2 inches in length. Chaff of the receptacle hairy at the summit. Corolla of the disk yellow, the lobes rarely if ever turning purplish; the anthers brownish, whence the disk appears somewhat dark-colored. Achenia compressed, when young sometimes slightly hairy at the summit. Pappus of two subulate chaffy awns, usually dilated at the base, lacerate-fringed.—Allied to H. rigidus; but the disk-flowers are yellow, as remarked by Persoon. We confidently refer Elliott's H. tricuspis to this species, although the specimens in his herbarium are exceedingly imperfect.

13. *H. occidentalis* (Riddell): stem slender, simple, naked above, somewhat hairy; radical and lower cauline leaves oval or lanceolate-ovate (acutish or obtuse), obscurely serrate, 3-nerved or triplinerved, scabrous above, roughish-pubescent beneath, abruptly contracted into long hairy petioles; the upper very small and remote, entire; heads 1–5 on slender peduncles; scales of the involucre oval-lanceolate, acute or acuminate, ciliate, appressed, scarcely as long as the disk; achenia villous-pubescent towards the summit. —*Riddell, suppl. cat. Ohio plants,* (1836) *p.* 13. H. heterophyllus, *Short! 3rd suppl. cat. Kentucky plants; Hook.! compan. to bot. mag.* 1. *p.* 98, β. partly (spec. from St. Louis); not of *Nutt.* (Varies with the stem nearly smooth and glabrous.)

β. *plantagineus:* stem (sometimes branching) and leaves almost smooth; scales of the involucre scarcely ciliate, attenuate-acuminate, as long as the disk.

Dry barrens, &c., from Michigan! Ohio! and Kentucky! to Missouri!

β. Texas, *Drummond!* July–Sept.—Stem slender, 1 to 3 feet high, nearly leafless, except towards the base. Lower leaves 3–5 inches long, 1–2 broad, usually roughish-pubescent or hirsute beneath; the petioles 5–8 inches long. Rays 12–15, nearly an inch in length. Chaff of the receptacle nearly glabrous, somewhat 3-toothed at the summit, acute. Achenia hairy towards the summit and along the angles. Pappus of 2 lanceolate-subulate awns.—Resembles H. heterophyllus, *Nutt.*, but an entirely distinct species, with a yellow disk. The leaves of the Texan specimens are more coriaceous, and appear glabrous to the naked eye and nearly smooth to the touch; but under a lens they are observed to be clothed with very fine and short appressed hairs.

14. *H. cinereus:* clothed with a close somewhat scabrous and cinereous pubescence; stem somewhat naked above; leaves ovate-oblong, acutish, appressed, serrulate, contracted at the base, sessile; the lowermost narrowed into a winged petiole; peduncles slender; scales of the involucre lanceolate, canescent; immature achenia villous at the summit.

β.? Sullivantii: larger and more branched; stem scabrous-hirsute; leaves obscurely serrate, acute, the uppermost often alternate.

Texas, *Drummond! β.* Near Columbus, Ohio, *Mr. Sullivant!*—Stem 2–3 feet high, virgate, sometimes a little branched, bearing few heads nearly as large as those of H. mollis. Leaves rigid, somewhat triplinerved, veiny, clothed with a fine strigose pubescence, which is cinereous on the lower, but more scabrous on the upper surface: the lowest leaves 3–5 inches long, including the narrowed base or petiole; the upper small and remote. Chaff of the receptacle pubescent and more or less 3-toothed at the apex; the middle lobe acuminate. Young achenia villous at the summit (under a lens), and somewhat so on the angles.

15. *H. mollis* (Lam.): stem villous; leaves ovate or lanceolate-ovate, acuminate, with a somewhat cordate and clasping base, serrulate or entire, cinereous-pubescent and slightly scabrous above, tomentose-canescent and reticulated beneath; scales of the involucre lanceolate, villous-canescent; mature achenia nearly glabrous.—*Lam.! dict.* 3. *p.* 81; *DC.! prodr.* 5. *p.* 587; not of *Willd. &c.* H. canescens, *Michx.! fl.* 2. *p.* 140. H. pubescens, *Willd.! spec.* 3. *p.* 2240 (excl. syn. *Vahl.*); *Bot. reg. t.* 524; *Ell.! sk.* 2. *p.* 418; *Hook.! comp. to bot. mag.* 1. *p.* 98.

Barrens and dry prairies from Ohio! Indiana! and the western part of Georgia! to Missouri! Louisiana! and Texas! Aug.–Sept.—A well marked, canescently villous species, 2–4 feet high, simple or sparingly branched at the summit, bearing rather large showy heads on stout peduncles. Leaves all closely sessile, broadest at or near the more or less cordate base, 3 to 6 inches long, often with both surfaces canescent, or the upper slightly scabrous, the lower very soft. Scales of the hemispherical involucre either broadly or narrowly lanceolate, acute or acuminate, somewhat unequal. Rays 15–25, an inch long. Chaff of the receptacle entire, the triangular summit canescent. Pappus of 2 lanceolate pointed chaffy scales, somewhat fringed.

* * * * * *Perennial: heads middle-sized: rays 8–24: involucre irregularly imbricated; the scales loose, or with squarrose-spreading often foliaceous summits, as long as the yellow disk (achenia glabrous).*—Corona-solis.

† Leaves commonly alternate or scattered, the lower often opposite, feather-veined, sometimes obscurely triplinerved.

16. *H. Nuttallii:* stem smooth; leaves alternate, the lower opposite, narrowly lanceolate-linear, acute, mostly entire, scarcely petioled, both sides

scabrous; scales of the involucre lanceolate-subulate, hirsute-ciliate towards the base; pappus of 2 linear-lanceolate chaffy awns or scales.—H. Californicus, *Nutt.! in herb. acad. Philad. &c.*, not of *DC.*

Plains of Lewis River, *Nuttall!*—Stem apparently strict and simple. Leaves 4–6 inches long, 3–5 lines wide, feather-veined, obscurely triplinerved near the base, somewhat cinereous beneath; the lower remotely and slightly serrate. Heads nearly as large as in H. giganteus. Involucre clothed with whitish hairs, or often smoothish. The disk-corolla is 5-nerved, or with intermediate nerves corresponding with the axis of 2 only of the laciniæ, but not reaching the apex.

17. *H. Californicus* (DC.): stem tall, smooth, loosely paniculate; upper leaves alternate, remote, elongated lanceolate, entire, attenuate at the base, acuminate, slightly ciliate, both sides scabrous, triplinerved; peduncles scabrous; scales of the involucre linear-sublanceolate, a little longer than the disk, squarrose-spreading, roughish-puberulent; achenia glabrous, 2-awned. *DC.! prodr.* 5. *p.* 589.

California, *Douglas!*—We can add little to De Candolle's character, except that the upper leaves (the lower not seen) are slightly petioled, obscurely triplinerved near the base, 3–5 inches long, one-half to an inch wide: heads larger than in H. giganteus; the rigid scales of the involucre nearly equal, not ciliate, very acute: pappus of 2 broadly-lanceolate somewhat fringed scales, tapering into an awn-like point.

18. *H. Maximiliani* (Schrad.): stem strigose-scabrous, branched; leaves alternate (those of the branches sometimes opposite), lanceolate, entire or nearly so, tapering to each end, acuminate, very scabrous and often canescent-strigose on both sides, the lower petioled; scales of the involucre lanceolate-subulate, much attenuate, strigose-canescent; pappus of 2 lanceolate slightly fringed chaffy scales.—*Schrad. ind. sem. hort. Gœtt.* 1835; *DC. prodr.* 7. *p.* 290.

Prairies, Missouri, *Prince Neu-wied.* (v. sp. cult.) *Mr. Keating?* in *herb. Schwein.!* Texas, *Drummond!*—A stout branching plant, bearing numerous heads fully as large as those of H. giganteus; the leaves equally rough on both sides; the canescent and numerous much attenuated scales of the involucre sometimes three-fourths of an inch long. In the wild specimens, we sometimes observe two nerves near the axis of some of the laciniæ of the disk-corolla.

19. *H. giganteus* (Linn.): stem roughish-hirsute or scabrous; leaves alternate or scattered (the lowest opposite), lanceolate, acuminate, serrate, very scabrous above, pilose-scabrous beneath, narrowed and ciliate at the base, subsessile; scales of the involucre linear-lanceolate, acuminate, hirsute or strongly villous-ciliate; pappus of 2 short lanceolate-subulate (slightly fringed) chaffy scales.—*Linn.! spec.* 2. *p.* 905 (excl. syn. *Gronov.*); *Ait.! Kew.* (*ed.* 1) 3. *p.* 249; *Willd.! spec.* 3. *p.* 2242; *Pursh, fl.* 2. *p.* 571; *Ell.! sk.* 2. *p.* 426; *Hook.! fl. Bor.-Am.* 1. *p.* 312; *Darlingt.! fl. Cest. p.* 484; *DC.! prodr.* 5. *p.* 589. H. altissimus, (*Linn. spec. ed.* 2. *p.* 1278?) *Jacq. hort. Vindob.* 2. *t.* 162; *Willd. l. c.* H. virgatus, *Lam. dict.* 3. *p.* 85. H. gigas, *Michx. fl.* 2. *p.* 141? Chrysanthemum Virginianum, &c., *Moris. hist.* 3. *t.* 7, *f.* 66 & 67; *Pluk. alm. t.* 159, *f.* 5. (Varies with the leaves nearly all alternate, or sometimes irregularly ternately verticillate.)

β. ambiguus: leaves nearly all opposite and closely sessile, obtuse or rounded at the base!

Thickets and borders of marshes, from Canada! and Saskatchawan! to Kentucky! and the mountainous portion of the Southern States! β. Copses, near Brooklyn, Long Island! Aug.–Oct.—Stem 3–10 feet high, branched above, corymbose-paniculate at the summit, smooth or nearly so towards the base. Leaves 2–5 inches long, half an inch to an inch broad, copiously feather-veined, and usually slightly triplinerved at the base. Rays 15–20, pale yellow, an inch or more in length.—This is a common species in the Northern States, and is very variable in the disposition of the leaves. The var. β. grows with, and apparently passes into the ordinary state of the plant; but it is remarkable for having the leaves not only opposite, but broadest near the sessile base, much as in H. divaricatus.

20. *H. grosse-serratus* (Martens): stem smooth and glaucous; leaves alternate, elongated lanceolate or ovate-lanceolate, attenuate-acuminate, sharply (the lower coarsely) serrate, scabrous above, tomentose-canescent beneath, mostly obtuse at the base, all on slender naked petioles; peduncles scabrous; scales of the involucre subulate-lanceolate, slightly ciliate; pappus of 2 lanceolate somewhat fringed chaffy scales.—*Martens, sel. sem. hort. Lovan.* 1839, *& in Linnæa, suppl.* 14. *p.* 133.

β. leaves less canescent beneath, tapering into the petiole; stem scabrous towards the summit.

γ. leaves softly canescent beneath; the lowermost opposite; the upper (more or less serrate) mostly acute at the base, on shorter petioles; stem smooth and glaucous.—H. giganteus, *Hook.! compan. to bot. mag.* 1. *p.* 98.

Dry plains &c. St. Louis, Missouri, *Mr. Duerinck*, (*Martens*) to Western Louisiana, *Dr. Hale!* and Texas (α. & β.) *Drummond!* γ. St. Louis, *Drummond! Dr. Engelmann!* and St. Peter's River, *Mr. Nicollet!* to Ohio, *Mr. Lea! Dr. Paddock! Mr. Sullivant!* Aug.–Sept.—The leaves in the Texan plant are 5–10 inches long, tapering regularly from near the obtuse base to the acuminate apex, on petioles 1–3 inches in length, feather-veined, or slightly triplinerved at the base, the very soft and close tomentose pubescence of the lower surface turning brownish when old. Heads larger than in H. giganteus: the pappus sometimes with intermediate squamellæ. It passes insensibly into var. γ., which closely approaches H. giganteus, but differs in the very smooth stem, the soft hoary pubescence of the leaves, and the slender petioles.—We have seen (in *herb. Schweinitz*) a curious monstrous state of this species, with the disk-flowers either transformed into rays, or into a 3–5-parted corolla, with very long linear (3-nerved) divisions; and with the anthers, and even the (commonly 3-cleft) style also changed into linear, 3-nerved, petaloid bodies.

21. *H. tomentosus* (Michx.): stem stout, hirsute-pubescent; leaves (ample, thin,) alternate or rarely opposite, oval-lanceolate, or the lower ovate, obscurely serrate, tapering to an acute point, contracted at the base, scabrous above, softly pubescent-tomentose beneath; the lowermost usually triplinerved; heads (large) on stout peduncles; scales of the involucre lanceolate, much acuminate, elongated, squarrose, villous; chaff of the receptacle (3-toothed) and the corolla tomentose or hairy at the summit; pappus of 2 subulate (minutely fringed) awns.—*Michx.! fl.* 2. *p.* 141; *Ell.! sk.* 2. *p.* 424; *DC. prodr.* 5. *p.* 589.

β. heads larger; peduncle leafy at the summit; involucre foliaceous (apparently a monstrous state).—H. squarrosus, *Nutt.! in trans. Amer. phil. soc. l. c.*

γ. leaves opposite, oval, acuminate, more distinctly petioled; scales of the involucre less acuminate, not longer than the disk.—H. spathulatus, *Ell.! sk.* 2. *p.* 421. (Leaves not in the slightest spatulate, all opposite in Mr. Elliott's specimen; in others frequently alternate.)

Dry soil, Illinois, and the western portions of North Carolina! Georgia! and Alabama! β. Columbus, Georgia! Aug.–Oct.—Stem 4–8 feet high. Lower leaves often a foot long, 3–6 inches broad, often opposite; the upper 3–8 inches long, copiously feather-veined, sometimes triplinerved, but often not at all so; all contracted at the base into a sort of winged petiole. Involucre an inch or more in diameter; the long taper-pointed scales hirsute or villous, especially on the margins. Rays 12–16, or in β. 20, apparently pale yellow, an inch and a half long. Corolla of the disk pubescent.

† † Leaves opposite, or the uppermost sometimes alternate, 3-nerved or triplinerved.

22. *H. doronicoides* (Lam.): stem branched, smooth below, scabrous-pubescent or hirsute above; leaves opposite or the upper alternate, ovate, or ovate-lanceolate, acuminate, serrate, strongly triplinerved, scabrous above, softly pubescent beneath; the upper sessile or somewhat petioled; the lower (often slightly cordate) on margined petioles; scales of the involucre linear-lanceolate, strongly hirsute-ciliate, acuminate, scarcely longer than the disk; rays 12–15.—*Lam. dict.* 2. *p.* 84 (1789), ex *DC.! prodr.* 5. *p.* 587, excl. syn. *Ell. &c.* H. pubescens, *Vahl, symb.* 2. *p.* 92, ex *DC.*, & *Hook. bot. mag. t.* 2778; not of *Willd.* H. Hookeri, *Don, in Loud. hort. Brit.*

β. leaves appressed-serrate, sometimes closely sessile, finely tomentose-canescent beneath.—H. pubescens, *Hook.! bot. mag. t.* 2778 (excl. syn.), & *compan. to bot. mag.* 1. *p.* 98.

γ. leaves less pubescent beneath; the lower (often a foot long) coarsely serrate-toothed.

Fields and river-bottoms, throughout the Western! and inland portion of the Southern States! July–Sept.—A large species, 5 to 8 feet high, with ample leaves and showy heads. Rays an inch and a half long. Chaff of the receptacle hairy at the summit, and more or less 3-toothed. Achenia glabrous, or when young slightly pubescent above. Pappus of 2 fringed subulate awns, and often with 2 or more intermediate denticulate-fringed squamellæ.—The var. β. often approaches H. tomentosus; and some states of var. γ. are very near H. decapetalus.

23. *H. strumosus* (Linn.): stem simple or sparingly branched and scabrous-pubescent at the summit, smooth below; leaves opposite, ovate-lanceolate, gradually acuminate, serrate with small appressed teeth, very scabrous above, whitish (and smooth or softly pubescent) beneath, somewhat triplinerved, abruptly contracted into short margined petioles; scales of the involucre lanceolate or ovate-lanceolate, acuminate, tomentose-ciliate, equalling the disk, the summits squarrose-spreading; rays mostly 10.—*Linn.! spec.* 2. *p.* 905; *Ait. Kew.* (*ed.* 1) 3. *p.* 249. (H. radice fusiformi, *Hort. Cliff.*; *Mill.! dict. ed.* 7. *no.* 4. Chrysanthemum Canadense strumosum, &c., *Herm. hort. Lugd.?*) H. lævis, *Walt. Car. p.* 215? H. macrophyllus, *Willd.! hort. Berol. t.* 70, & *enum. p.* 920; *DC.! prodr.* 5. *p.* 587. H. decapetalus, *Darlingt.! fl. Cest. p.* 483. H. altissimus, *DC. l. c.*, excl. β.

β. *mollis:* leaves softly canescent beneath.—H. mollis, *Willd.! spec.* 3. *p.* 2240 (excl. syn. *Michx.*); *Pursh, fl.* 2. *p.* 572; *Ell.! sk.* 2. *p.* 418; *Hook.! bot. mag. t.* 3689; not of *Lam.*

γ.? *leptophyllus:* leaves lanceolate, slender, pale but nearly smooth beneath, almost entire.—H. tracheliifolius β. foliis lanceolatis, *Hook.! compan. to bot. mag* 1. *p.* 98.

Copses and banks of rivers, Canada, and throughout the Northern and Western States! to Georgia! and Arkansas! γ. Covington, Louisiana, *Drummond!* July–Sept.—Stem 2–4 feet high. Leaves 3–8 inches long, an inch or less to 3 inches wide towards the base, on petioles half an inch or rarely an inch long, tapering to a sharp point, serrulate, green above; the lower surface of a glaucous or lead-colored hue, or nearly white, but often glabrous, except a few minute hairs on the veins, thence varying to tomentose-canescent; the lateral nerves small, but usually continued by anastomosing with the veins; the branch-leaves sometimes alternate. Involucre more imbricated and appressed than in the following, with short spreading tips. Rays an inch to an inch and a half long, often half an inch wide, bright yellow. Pappus of 2, or sometimes 3, subulate chaffy awns, and frequently with 2 or 3 small intermediate scales, all ciliate.—The var. β. only differs in the degree of the pubescence of the leaf, which is inconstant.—This species is sometimes cultivated in Europe under the name of H. decapetalus; and a different plant appears to have been known as H. strumosus: but if we mistake not, this is the H. strumosus of Miller, of the Kew garden, &c. It is readily distinguished by the form of the leaves, their inconspicuous serratures, and the whitish lower surface.

24. *H. decapetalus* (Linn.): stem branching, smooth below, scabrous at the summit; leaves opposite, or those of the branches alternate, thin, ovate, acuminate, coarsely serrate, triplinerved, scabrous above, smooth or scabrous beneath; the upper ovate-lanceolate; all abruptly contracted into usually winged petioles; scales of the involucre narrowly lanceolate-linear, loose, squarrose-spreading, ciliate, the exterior longer than the disk; rays 8–10 (rarely 13).—*Linn.! spec.* 2. *p.* 905; *Ait.! Kew.* (*ed.* 1) 3. *p.* 249; (*Ell. sk.* 2. *p.* 425?) *Hook.! bot. mag. t.* 3510; *DC.! prodr.* 5. *p.* 588. H. strumosus & H. tenuifolius, *Ell.! sk.* 2. *p.* 420. H. multiflorus (partly) & H. frondosus, *Hook.! fl. Bor.-Am.* 1. *p.* 312. H. frondosus, *Darlingt.! fl. Cest. p.* 483.

γ. *frondosus* (Hook. bot. mag. l. c.): exterior scales of the involucre larger and foliaceous, one or more of them often changed to leaves.—H. frondosus, *Linn.! amœn. acad.* 4. *p.* 290, *& spec. ed.* 2. *p.* 1277.

Banks of streams &c., Canada! and Northern States! to Kentucky! and the mountains of Georgia! Aug.–Sept.—Stem 2–5 feet high, usually purplish. Leaves 3–6 inches long, 1–3 broad, obtuse at the base, coarsely serrate or toothed, rather paler and often scabrous, but never pubescent beneath; the upper surface scabrous with short often scattered hairs: they are very thin when the plant grows in shade, and frequently perfectly smooth beneath. Heads middle-sized, on slender terminal peduncles. Involucre very variable. Rays rather pale yellow, an inch to an inch and a half long, and one-third of an inch wide. Pappus of 2 subulate chaffy awns.

25. *H. tracheliifolius* (Willd.): stem loosely branching, hairy or somewhat scabrous; leaves opposite, or those of the branches alternate, thin, ovate-lanceolate or oblong-lanceolate, acuminate, sharply serrate, triplinerved, scabrous or roughish-pubescent on both sides, contracted into short petioles; scales of the involucre lanceolate-linear, attenuated, ciliate, very loose, longer than the disk; the exterior often produced into long subulate squarrose-spreading appendages; rays 12–15.—*Willd. spec.* 3. *p.* 2241, *& enum. p.* 920; *Link, enum.* 2. *p.* 332.

Northern States? to Ohio! and Indiana! Aug.–Sept.—What we take for H. tracheliifolius, on the authority of a specimen gathered in the Berlin Botanic Garden, as well as from the original character, is a species with the habit of H. decapetalus, but with narrower and more appressed serrate leaves, not strongly triplinerved, mostly long and slender scales of the involucre, which are often inclined to become foliose, and pretty large pale yellow rays. Link remarks that it is a more hairy plant than H. decapetalus, with smaller flowers: but the stem is nearly glabrous in our cultivated and some of the wild specimens (the heads as large as those of H. decapetalus), while others are quite hirsute; and the lower surface of the leaves is sometimes nearly or quite smooth and glabrous. We are not sure that it has been described under this name by any succeeding author.—The plant cultivated in the Berlin Garden in 1839 as H. prostratus, (very probably the H. prostratus, *Willd. spec. &c.* but not Viguiera prostrata, *DC.*) appears to be a state of this species, and is an erect plant.

26. *H. hirsutus* (Raf.): stem simple, or dichotomous at the summit, hirsute, rough; leaves opposite, more or less petioled, ovate-lanceolate, gradually acuminate, sparsely serrate, mostly rounded or obtuse at the base, 3-nerved or triplinerved, very scabrous above, hirsute-pubescent beneath; scales of the involucre ovate-lanceolate, acuminate, hirsute-ciliate, imbricated, equalling the disk; rays usually 12.—*Raf.! ann. nat.* (1820) *p.* 14; *DC. prodr.* 5. *p.* 591. (Varies with the leaves nearly ovate, usually thickish, but membranaceous when growing in shady places.)

β. diversifolius: cauline leaves broadly ovate-lanceolate; those of the branches oval or ovate, sometimes slightly cordate, nearly entire.—H. diversifolius, *Ell.! sk.* 2. *p.* 423.

γ. trachyphyllus: stem hispid; leaves uniform, ovate-lanceolate, mostly subcordate, large (6 inches long, 2 inches wide at the base), very rough on both sides; heads larger; rays 12–15.

δ. stenophyllus: smaller; stem hispid; leaves narrowly lanceolate, scarcely triplinerved, hispid-scabrous above, roughish-hirsute beneath, the upper entire.

Dry soil, from Ohio! and Indiana! to Louisiana! and the western part of North Carolina! Georgia! and Alabama! γ. Arkansas, *Dr. Pitcher!* δ. Western Louisiana, *Dr. Hale! Dr. Leavenworth!* Texas, *Drummond!* July–Oct.—A polymorphous species, with larger heads than H. divaricatus (on short peduncles, which are sometimes leafy at the summit); and the scales of the involucre (often scabrous-hirsute) more appressed, but the tips at length more or less spreading: it is also distinguished by the distinct, although short petioles. Pappus of two subulate denticulate awns, longer than the achenia.

27. *H. divaricatus* (Linn.): stem simple, or corymbose-2–3-dichotomous above, smooth, or the branches and peduncles sparsely hispid with spreading hairs; leaves opposite, divaricate, sessile, ovate-lanceolate, or lanceolate from an ovate base, gradually acuminate, serrate, 3-nerved from the rounded or truncate base, very scabrous above, scabrous-pubescent beneath; scales of the involucre lanceolate from a broad base, acuminate, ciliate, imbricated, at length squarrose-spreading, equalling the disk; rays 8–12.—*Linn.! spec.* 2. *p.* 906; *Ait.! Kew.* (*ed.* 1) 3. *p.* 250; *Pursh, fl.* 2. *p.* 576 (excl. the char., which seems to have been made from Michaux's and therefore belongs to H. microcephalus); *Bigel.! fl. Bost. ed.* 2. *p.* 315; *Hook.! fl. Bor.-Am.* 1. *p.* 312 (excl. char.); *Darlingt.! fl. Cest. p.* 482; *DC.! prodr.* 5. *p.* 587. H. truncatus, *Schwein.! in Ell. sk.* 2. *p.* 416. Chrysanthemum Virginianum &c., *Moris. hist.* 6. *t.* 3, *f.* 62.

Borders of thickets and dry fields, Canada! and Saskatchawan! to Louisiana! and Florida! July–Sept.—Stem 1–5 feet high, often purplish and at the same time glaucous. Leaves sometimes ternate, the cauline perhaps never alternate, decussate, divaricate, broadest at the sessile or nearly sessile base, thence tapering to a sharp point, 3–6 inches long, an inch or less (rarely 2 inches) wide at the base. Heads rather small. Pappus of 2 short subulate chaffy awns.

* * * * * * *Perennial: heads small: rays* 5–8, *rarely* 10: *scales of the involucre few, irregularly imbricated, appressed, shorter than the yellow disk; the exterior with squarrose-spreading herbaceous or acuminate tips.*—Microcephali.

28. *H. microcephalus:* stem smooth and glabrous, with numerous slender and spreading 2–3-chotomous branches; leaves (sometimes all opposite, occasionally with all the upper ones alternate,) membranaceous, ovate-lanceolate, attenuate-acuminate, somewhat serrate, petioled, veiny, triplinerved, scabrous above, tomentose-pubescent beneath; heads on slender scabrous-pubescent peduncles; scales of the involucre ovate and ovate-lanceolate, appressed,

ciliate; the exterior with acute or acuminate herbaceous squarrose-spreading tips; rays 5–6; pappus of 2 small subulate chaffy awns.—H. divaricatus, *Michx.! fl.* 2. *p.* 141; *Ell.! sk.* 2. *p.* 428; not of *Linn.* H. strumosus, *var.* pallidus, *Ell.! l. c. p.* 420. H. parviflorus, *Bernh. in Spreng. syst.* 3. *p.* 617? but not of *H. B. & K.*, (which apparently has the priority in publication.)

β. leaves more sharply serrate, the soft pubescence of the lower surface turning brownish; heads rather larger.—H. divaricatus *var.* ferrugineus, *Ell.! l. c.*

γ. upper leaves ovate; heads rather larger; involucre more squarrose.—H. trachelifolius, *Hook.! comp. to bot. mag.* 1. *p.* 98.

Thickets, and in alluvial soil, Upper Canada! (*Goldie, in herb. Hook.*) Western Pennsylvania! Ohio! Indiana! and Kentucky! to the western part of Georgia! and to Louisiana! *γ.* Covington, Louisiana, *Drummond!* July–Sept.—Stems growing usually in tufts, 3–6 feet high, 2–3-chotomously branched. Leaves clothed beneath with a soft pubescence, and sprinkled with minute resinous dots, very veiny, and somewhat reticulated, abruptly contracted into distinct petioles an inch or less in length (it is evidently by a misprint or error of the pen, that Elliott describes the petioles as 3 to 6 inches long!): the lower 6 to 10 inches long, 2–3 broad at the base, tapering to a long acuminate point, the upper similar but smaller and often entire, or frequently elongated lanceolate and slightly falcate. Heads somewhat oblong, nearly half an inch long, about one-third of an inch in diameter. Chaff of the receptacle oblong, pubescent at the apex, and more or less 3-toothed. Rays nearly an inch long. Throat of the disk-corolla scarcely longer than the lobes, pubescent towards the base, as well as the short tube. Pappus shorter than the nearly glabrous achenia.—Somewhat variable in foliage, &c.; but remarkable for its very few rays, which are large for the size of the head, its smooth much-branched stems, and thin distinctly petioled leaves.

29. *H. Schweinitzii:* stem strigose-pubescent, branching above; leaves opposite (or those of the branches alternate), narrowly lanceolate, tapering to a slender acute point, obscurely and sparingly serrulate, narrowed at the base, nearly sessile, triplinerved, very scabrous above, densely tomentose and canescent beneath; heads on slender canescent peduncles terminating the dichotomous branches; scales of the involucre ovate-lanceolate, acute or acuminate, hairy, the tips squarrose; rays mostly 8; pappus of 2 lanceolate or ovate-lanceolate chaffy scales.

Near Salem, North Carolina, *Schweinitz!* and in Mecklenburg County, *Mr. M. A. Curtis!*—Stem apparently 3 to 6 feet high. Leaves thickish; the lower 6–10 inches long, and scarcely an inch wide near the base; the upper 3–5 inches long, half an inch wide, more closely sessile. Heads rather larger than in H. microcephalus: involucre somewhat hirsute-canescent; the scales rather shorter than the disk. Chaff of the receptacle more or less 3-toothed and hairy at the summit. Pappus shorter than the glabrous achenia.

30. *H. lævigatus:* stem glabrous and glaucous, branching; leaves opposite, or the uppermost alternate, oblong-lanceolate, acute, sessile, entire or obscurely serrulate, with scabrous margins, smooth and glabrous on both sides, veiny, indistinctly triplinerved; heads terminating the dichotomous branchlets; scales of the involucre ovate, appressed, mostly with acuminate spreading tips, nearly glabrous; rays 6–8; pappus of 2 lanceolate or ovate concave chaffy scales, and usually of 2 to 4 intermediate squamellæ.

Southern States?—The ticket of our specimen having been lost, we are uncertain as to its particular locality. It belongs to a plant 4 or 5 feet high, branching after the manner of H. microcephalus; with somewhat coriaceous smooth leaves, which are less veiny as well as more obscurely triplinerved than in that species, pale beneath, acute at the base, but nearly or quite sessile. Heads about twice the size of those of H. microcephalus, of the same shape, on slender peduncles; the scales of the involucre (all shorter than the disk) slightly ciliate. Chaff of the receptacle linear, entire, obtuse. Corolla of the disk with a long throat, and a very short proper tube. Achenia glabrous, or with a few minute scattered hairs. Intermediate scales of the pappus sometimes confluent with the larger ones, all deciduous, as usual in the genus.

31. *H. longifolius* (Pursh): very smooth and glabrous; stems slender, often numerous from the same root; leaves opposite or rarely alternate, linear-lanceolate, acutish, entire, obscurely triplinerved, sessile; the lowermost and radical tapering into slender margined petioles, rarely somewhat serrate; heads few, terminating the simple or dichotomous branches; scales of the involucre ovate-lanceolate; the exterior with lanceolate-subulate spreading tips, as long as the disk; rays about 10, narrow; achenia hairy at the summit; pappus of 2 ovate-lanceolate concave denticulate-fringed chaffy scales, and usually with two intermediate squamellæ.—*Pursh, fl.* 2. *p.* 571; *Ell.! sk.* 2. *p.* 417. Leighia longifolia, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 365.

Western part of Georgia! in wet soil. Sept.–Oct.—An anomalous species, with the aspect of an aquatic Coreopsis, as Elliott remarks, very smooth throughout. Stems 2 to 4 feet high, nearly simple. Leaves 3–8 inches long, one-fourth to half an inch wide, thickish. Heads as large as in H. microcephalus; the glabrous scales of the involucre somewhat fleshy, appressed, except the slender herbaceous tips. Rays about half an inch long. Chaff of the receptacle narrow, glabrous, 3-toothed. Achenia glabrous, except the very summit. Pappus deciduous, as in the whole genus; the small intermediate scales frequently confluent with the larger ones.

‡ *Obscure or little-known species.*

32. *H. pauciflorus* (Nutt.): leaves opposite, linear-lanceolate, acuminate, serrate, nearly smooth; stem naked, trichotomous, few-flowered; scales of the involucre closely imbricated, ovate. *Nutt. gen.* 2. *p.* 177.

Lower Louisiana.—Plant 4–5 feet high. Leaves sometimes ternately verticillate, very long, paler beneath and somewhat pubescent. Ray and disk nearly the same color. *Nutt.*—This species is unknown to us; we find no specimen in the herbarium of the Academy of Natural Sciences.

33. *H. pumilus* (Nutt.): hirsutely pilose and scabrous; leaves opposite, ovate-lanceolate, attenuated below, subpetiolate, nearly entire, 3-nerved; upper leaves lanceolate, alternate; involucrum hoary, hispid, the scales imbricated, lanceolate, acute, as well as the receptacular paleæ; achenium smooth.—*Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 366.

β.? Nicolleti: somewhat strigose-canescent: stem simple; leaves (the lowest wanting) lanceolate, 1-nerved, tapering to the base, sessile, obscurely serrulate; the uppermost alternate; scales of the involucre lanceolate or subulate, canescently pubescent; rays 14–20; pappus of 2 oblong-lanceolate chaffy scales.

Rocky Mountains of the Platte, *Nuttall;* who describes it as a perennial, single-stemmed species, about a foot high; the leaves 2–3 inches long, about an inch wide. Heads 3–5, apparently sessile. Rays 16. Chaff of the achenium rather large and wide.—The var. β.? collected near Devil's Lake in the N. W. Territory, by Mr. Nicollet, has scabrous hoary leaves, about half an inch wide, and pretty large heads for the size of the stem. It is perhaps different from Mr. Nuttall's plant, which is unknown to us; but the specimens are insufficient. We have seen a fragment of the same species, collected in the same region during Major Long's second expedition; in which all the leaves are opposite and somewhat spatulate, the cauline broader, and nearly agreeing with the character of Mr. Nuttall's H. pumilus.

34. *H. Douglasii*: upper part of the stem and branches scabrous-hirsute; the leaves alternate, rhomboid-oblong, scabrous-pubescent, obscurely tripli-nerved, entire or slightly toothed, contracted into winged petioles; peduncles terminal, naked; exterior scales of the involucre foliaceous, linear-oblong, obtuse, longer than the disk, spreading or reflexed; rays 12 or more, small; chaff of the receptacle entire; achenia glabrous; pappus of two deciduous, subulate chaffy awns. = H. Californicum, DC? Benth. Sulph.!

California, *Douglas!*—The imperfect specimens from which we have ventured to describe this species (mentioned by Hooker & Arnott in the supplement to Capt. Beechey's Voyage, p. 153), consist only of branches, or of the summit of the stem, which appears to have been weak or decumbent: the leaves are 2–3 inches long, including the cuneiform base or winged petiole. probably only californicum.

35. *H. hispidulus* (Ell.): stem scabrous; leaves opposite, sessile, ovate-lanceolate, tapering towards the summit, serrulate, scabrous on the upper surface, paler underneath and slightly hispid; scales of the involucre ovate-lanceolate, ciliate; chaff 3-toothed, *Ell. sk.* 2. *p.* 419.

Pine barrens near Louisville, Georgia. Sept.–Oct.—Stem 3–4 feet high. Leaves long, narrow, triplinerved, very obscurely serrulate. Involucre as long as the disk. Rays 8–10, about an inch long. *Ell.*—So wretched are the original specimens in Elliott's herbarium, now before us, that we are unable to offer any decided opinion respecting this species; except that it is not H. divaricatus, but more likely to prove a variety of H. strumosus. The leaves, although nearly or quite sessile, are contracted at the base, paler beneath, and beset with small and scattered, rather rigid white hairs along the veins, and sprinkled with minute resinous atoms (under a lens), similar to what we frequently observe in H. strumosus.

36. *H. multiflorus* (Linn.): rhizoma terete, inflexed; stem erect, branching, scabrous; leaves alternate, sometimes opposite, or the lowest ternate, petioled, toothed, triplinerved, scabrous; the lower cordate, the upper ovate; scales of the involucre lanceolate, the exterior linear-lanceolate, ciliate, spreading, but not squarrose; rays oblong, numerous. *DC.—Linn.!* (*hort. Cliff.*) *spec.* 2. *p.* 905; *Ait. Kew.* (*ed.* 1) 3. *p.* 248; *Lam. ill. t.* 706; *Bot. mag. t.* 227; *DC. prodr.* 5. *p.* 590, probably not of *Pursh*, &c.

Virginia, according to authors (Equatorial America, *Hort. Cliff.*): but we have seen no native specimens that correspond with the cultivated plant, which has been known in European gardens for more than 200 years. We greatly doubt if it were derived from this country; but if so, it probably originated either from H. decapetalus or H. doronicoides. It is well characterized by Linnæus as having cordate-ovate leaves, with the scales of the involucre [elongated linear-lanceolate] loosely imbricated, neither squarrose nor drooping.

‡ ‡ *Introduced species.*

37. *H. tuberosus* (Linn.): root bearing oblong tubers; stem erect, branching, scabrous; leaves alternate, petioled, triplinerved, scabrous, serrate; the lower [opposite] cordate-ovate; the upper ovate, acuminate; petioles ciliate at the base; scales of the involucre linear-lanceolate, ciliate. *DC.—Jacq. hort. Vindob. t.* 161; *Schkuhr, handb. t.* 258; *Beck, bot. p.* 203; *Darlingt. fl. Cest. p.* 484.

Naturalized along fence-rows, &c., in many places, where it becomes a troublesome weed. Said to have been derived originally from Brazil:

cultivated for a very long period for its fleshy tubers.—Rays 12–15. Pappus of 1 to 4 subulate scales or chaffy awns.—*Jerusalem Artichoke.*

H. neglectus, Hort. Berol. 1840; we have seen no description of this species. Is it H. rigidus?

H. villosus, Nutt. is enumerated in *Loud. hort. Brit.*, but no-where described.

98. HELIANTHELLA.

Heads many-flowered; the ray-flowers 10–24, neutral; those of the disk perfect. Scales of the involucre linear or lanceolate, in about 2 series, loose, somewhat foliaceous. Chaff of the receptacle persistent, embracing the achenia. Corolla of the disk cylindrical, elongated, 5-toothed, with a very short proper tube. Branches of the style very hispid, more or less obtuse. Ovary compressed, with one or both margins slightly winged and produced at the summit into a short auriculate and lacerate persistent appendage or into an awn, sometimes with intermediate squamellæ, or an obscure coroniform fringe, glabrous, or ciliate.—Perennial herbs, with linear or lanceolate mostly scattered and sessile entire leaves, and solitary showy heads terminating the stem or branches.

§ 1. *Receptacle convex: appendages of the style slender, hispid throughout.*

1. *H. grandiflora:* stem simple, leafy, scabrous-pubescent; leaves lanceolate-linear, 1-nerved, scabrous-hispid; scales of the involucre lanceolate, acute, somewhat appressed, about the length of the disk; rays 16–20, elongated; chaff of the receptacle as long as the corolla, obscurely 3-toothed; immature achenia oval, compressed, glabrous, with 2 obtuse auricles at the summit, which are somewhat lacerate-fringed, and often bear one or more minute and deciduous aristate squamellæ, the whole summit crowned with a ring of minute hairs; the inner edge slightly winged.

East Florida, *Dr. Leavenworth! Dr. Burrows!*—Stem apparently 3–4 feet high, the base wanting. Leaves without order, sometimes nearly opposite, 2–4 lines wide, obtuse at the base: the lower 2 inches, the uppermost scarcely an inch long. Disk nearly an inch in diameter; the rays sometimes 2 inches long. Corolla sparsely hairy towards the base, the teeth nearly glabrous. The two gibbosities or auricles of the achenia resemble the pappus of some species of Coreopsis; that which is formed by the prolongation of the inner and wing-like margin of the achenium is often largest: there are no intermediate squamellæ, but a crown-like minute ring of bristles which probably takes their place: the small awns or squamellæ, when present, arise from within the auricles.

2. *H. tenuifolia:* stem slender, scabrous, simple, or branching at the summit; leaves very narrowly linear, 1-nerved, very scabrous; scales of the involucre lanceolate-subulate, loose, hirsute, as long as the disk; rays 10–12; chaff oblong, 3-lobed, shorter than the corolla; achenia glabrous, short, quadrangular; the anterior and posterior angles strongest or somewhat margined, each produced at the summit into a stout persistent chaffy tooth, the intermediate angles obscurely toothed.

Sand hills, Middle Florida, *Dr. Chapman!*—Leaves 2 inches or more in length, less than a line wide. Heads not half the size of the preceding. Disk-corolla short, glabrous; the proper tube very short and indurated.

Style bulbous at the base. Summit of the achenium obscurely coroniform, produced into a short somewhat lacerate tooth at the principal angles (the inner angle strongest), and very obscurely toothed at the intermediate angles.

§ 2. *Receptacle flat; the chaff broad, chartaceo-membranaceous, entire: scales of the involucre squarrose-spreading; the inner linear-lanceolate; the exterior foliaceous, or some of them changed into leaves: branches of the style smooth below, terminated by a short dilated or spatulate appendage, with hispid margins: teeth of the corolla densely puberulent externally: ovaries flat, with narrow winged margins.*

3. *H. Douglasii:* stem (the upper portion) hirsute with spreading hairs; striate-angled; leaves oblong-lanceolate, acutish, sessile, triplinerved, glabrous, or sparsely hirsute-pubescent on the midrib and margins; head solitary, pedunculate; the winged margins of the young achenia lacerate-fringed at the summit, not awned; intermediate squamellæ obsolete or none.

Interior of Oregon; "common on the subalpine range of the Blue Mountains, 3–5 feet high, rarely branching," *Douglas!* in *herb. Hook.*—The specimen wants the lower part of the stem: it appears to be nearly allied to Mr. Nuttall's Leighia lanceolata; but the leaves are closely sessile and triplinerved at a considerable distance from the base: the solitary head (the flat disk an inch in diameter, the rays about 24,) is borne on a hirsute peduncle 2 inches long; and the wings of the ovary, which form lacerate appendages at the summit, are not produced into awns. Better specimens, however, are needed for the proper determination of these species.—The corolla in this genus exhibits the ordinary venation of the family; but some flowers of this species present the intermediate nerves, like most Helianthi.

4. *H. lanceolata:* nearly glabrous; stem grooved, bearing 2–3 or more subsessile heads; leaves lanceolate, acuminate at each end, petioled, 3-nerved, a little hairy; the upper and lower alternate, the intermediate opposite; achenia short, obcordate, the narrow (not ciliated) wings produced into slender persistent awns twice or thrice the length of the ovary; intermediate squamellæ obsolete.—Leighia lanceolata, *Nutt.! in trans. Amer. phil. soc. (n. ser.) 7. p.* 365.

Rocky Mountain plains, and Upper California? *Nuttall.*—Having no specimens (except the ovaries), we have drawn the character from Mr. Nuttall's description. The stem is said to be 12 to 18 inches high; the lower leaves 6–8 inches long, an inch broad. Rays 12–14: the chaff retuse.

5. *H. uniflora:* stem and leaves clothed with a short and soft somewhat cinereous pubescence; leaves lanceolate-oblong, rather acute, triplinerved, narrowed at the base, sessile, the middle ones sometimes opposite; head solitary on a long naked peduncle; involucre leafy at the base; the narrow wings of the young obovate achenia ciliate, each bearing at the summit 1 or 2 stout apparently persistent awns as long as the ovary; intermediate squamellæ 2–4, obtuse, lacerate.—Helianthus uniflorus, *Nutt.! in jour. acad. Philad.* 7. *p.* 37. Leighia uniflora, *Nutt.! in trans. Amer. phil. soc. l. c.*

Rocky Mountains, on the sources of the Missouri, *Mr. Wyeth!* June.—Resembles the preceding; and like them with the nerves of the leaves connected by transverse reticulated veinlets. Rays 15–20, more than an inch long.—This species makes a nearer approach to Leighia than the others, but certainly it does not belong to that genus.

Leighia? Hookeriana, Nutt. l. c.= Helianthus Hookerianus, *DC.* =H. longifolius, *Hook.* (not of *Pursh*), is Wyethia robusta, *Nutt.!* *Leighia debilis*, Nutt. l. c. (in a note) from Maldonado, is apparently L. buphthalmiflora *β. Hook. & Arn.*; and *L. Baldwiniana*, Nutt. l. c. is Pascalia glauca, *Ort.*, *DC.*

7 9~~6~~. ACTINOMERIS. *Nutt. gen.* 2. *p.* 131 (1818); *DC. prodr.* 5. *p.* 575.

Pterophyton, *Cass.* (1818)—Actimeris, *Raf.*

Heads many-flowered; the ray-flowers 4–14, elongated, or sometimes wanting. Scales of the involucre foliaceous, nearly equal, in 1–3 series, mostly shorter than the disk. Receptacle convex or conical, chaffy; the chaff embracing the outer margin of the achenia. Corolla of the disk with a more or less inflated 5-lobed limb longer than the tube. Branches of the style terminated by an acute or subulate cone. Achenia compressed, obovate, mostly winged, flat, crowned with 2 nearly smooth persistent awns.—Tall and branching (North American and Mexican) perennial herbs, with alternate or opposite ovate or lanceolate serrate (feather-veined) leaves, which (although often tapering at the base as if petioled) are mostly decurrent on the terete stem. Heads corymbose. Flowers yellow, rarely white.

§ 1. *Receptacle very small, subglobose: scales of the involucre somewhat in a double series, spreading or reflexed, rather shorter than the disk: rays* 4–8 *or rarely* 12, *usually few and irregular: achenia broadly winged: disk squarrose in fruit: flowers yellow.*—ACTIMERIS.

1. *A. squarrosa* (Nutt.): stem more or less pubescent and hairy and winged above; leaves oblong-lanceolate or the lower ovate-lanceolate, tapering or acuminate at both ends, often slightly petioled, scabrous above, hirsute-pubescent or nearly glabrous beneath, serrate; heads in a loose corymbose panicle; scales of the involucre in 2 series; the exterior linear-spatulate or oblanceolate, reflexed; awns stout, much shorter than the achenium. —*Nutt.! gen.* 2. *p.* 131; *Ell. sk.* 2. *p.* 413, excl. *β.* Coreopsis alternifolia, *Linn.! spec.* 2. *p.* 909; *Willd.! spec.* 3. *p.* 2257; *Jacq. hort. Vindob. t.* 110. C. procera, *Ait.! Kew.* (*ed.* 1) 3. *p.* 258. C. acuta, *Pursh, fl.* 2. *p.* 569? Verbesina Coreopsis, *Michx.! fl.* 2. *p.* 134, excl. *β.*

α. alternifolia: leaves alternate, or the lower frequently opposite; rays 4–8.—A. alternifolia, *DC.! prodr.* 5. *p.* 575.

β. oppositifolia: lower leaves generally opposite, sometimes ternately verticillate (*Engelmann, in litt.*); rays 6–12.—A. oppositifolia, *Fresenius, ind. sem. hort. Franc.* 1836, *& in Linnæa*, 12, *suppl. p.* 77; scarcely of *DC. prodr.* 7. *p.* 290?

Dry or alluvial soil, throughout the Western States from Michigan! to Arkansas! Western New York, *Dr. Sartwell!* and in the western portion of the Southern Atlantic States! Aug.–Oct.—Stem 4–8 feet high, glabrous below. Lower leaves a foot or more in length, coarsely serrate or toothed. Chaff ovate, much shorter than the corolla, coriaceous.—The A. oppositifolia was described from a plant produced by seeds sent from Illinois by Dr. Engelmann, who informs us that the common plant of that region generally has opposite leaves. De Candolle's description of A. oppositifolia seems to have been drawn from a variety of A. helianthoides, except the appended "achenia lato-alata," which was probably taken from Fresenius.

§ 2. *Receptacle very small, subglobose: scales of the involucre few in a single series, at length reflexed: achenia usually broadly winged: rays none: disk squarrose in fruit: the corolla white.*—ANACTIMERIS.

2. *A. alba:* stem smooth and glabrous, or scabrous-puberulent at the summit, often slightly winged above; leaves alternate, narrowly lanceolate, tapering to each end, slightly petioled, serrate, scabrous; heads in a loose corymb; scales of the involucre lanceolate-subulate; achenia crowned with 2 slender awns.—A. squarrosa, *var.* alba, *Nutt. l. c.; Ell.! l. c.* Verbesina Coreopsis *β.* alba, *Michx.! l. c.; Pursh, l. c.*; Athanasia paniculata, *Walt. Car. p.* 201.

Alluvial soil &c., S. Carolina to Western Louisiana! Aug.–Oct.—Stem 3–10 feet high. Leaves 5–8 inches long; the lower ones very sharply serrate; the upper often decurrent, but frequently not at all so. Heads smaller than in A. squarrosa. Chaff ovate-lanceolate, shorter than the flowers, membranaceous. Achenia with a very broad white wing; which is frequently so large that the transverse diameter of the fruit is twice as great as the longitudinal; while some of the achenia, even in the same head, are nearly or quite wingless: the awns longer than in the preceding species, and the corolla with a more deeply cleft limb.

§ 3. *Receptacle conical: scales of the involucre in 2–3 series, not spreading or reflexed in fruit: rays 8–15, regular: achenia slightly winged: flowers yellow: stem (and sometimes even the peduncles) conspicuously winged with the decurrent alternate leaves.*—PTEROPHYTON, Cass. (partly.)

3. *A. helianthoides* (Nutt.): stem hirsute-pubescent; leaves alternate, ovate-lanceolate, acute, serrate, closely sessile, canescently villous with soft appressed hairs beneath, strigose-scabrous above; heads few in a contracted simple corymb; peduncles mostly wingless; rays 10–14, long and narrow; achenia crowned with 2 setiform awns.—*Nutt.! gen.* 2. *p.* 181; *Ell. sk.* 2. *p.* 413; *DC.! prodr.* 5. *p.* 575, *&* 7. *p.* 290. (*α.* Nuttallii & *β.* Elliottii!) Verbesina helianthoides, *Michx.! l. c.*

Thickets, and in prairies, Ohio! Illinois! and Missouri! to the western part of Georgia! Louisiana! and Arkansas! June–July.—Stem 2–4 feet high. Leaves about 3 inches long and one or more broad, acute or attenuate-acuminate. Scales of the involucre canescent, lanceolate, oval, or somewhat spatulate. Rays narrowly lanceolate, 18–20 lines long, golden yellow. Corolla of the disk deep yellow, with an elongated throat, 5-toothed. Anthers conspicuously appendiculate. Chaff rigid, lanceolate, longer than the fruit. Achenia oval, pubescent; the awns rather short, very slender, fragile, —The plant cultivated in the Geneva garden has much broader involucral scales than we have observed in indigenous specimens. The habit is quite different from the other N. American species: the disk does not become squarrose; and the receptacle is almost like that of Rudbeckia. A. ovata, and A. tetraptera, *DC. &c.* apparently belong to this section.

§ 4. *Receptacle at length conical: scales of the involucre few, in 2–3 series, not spreading or reflexed in fruit; the exterior lanceolate, much shorter than the disk; the innermost resembling the chaff: rays 7–12: achenia usually wingless, with short awns: flowers yellow: leaves closely sessile, mostly opposite, not at all decurrent.*—APTERON.

4. *A. nudicaulis* (Nutt.): scabrous-hirsute; stem wingless, paniculately

branched at the summit; the branches slender, naked above; leaves oval or lanceolate-oblong, sharply and unequally serrate, obtuse or rather acute, sessile by a slightly cordate base; the uppermost alternate or scattered; heads irregularly corymbose; rays linear, elongated; achenia obovate-oblong, occasionally winged on one or both sides.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 364. Helianthus? aristatus, *Ell.! sk.* 2. *p.* 428.

Dry sterile soil, Georgia! Alabama! and Middle Florida! Aug.–Nov.—Stem 2–3 feet high, often simple. Leaves 2–3 inches long, 1–1½ broad. Heads small, 2–5 on each erect branch; the central or primary on a short peduncle; the lateral on slender spreading peduncles. Chaff ovate-lanceolate, acute, longer than the achenia. Awns erect, variable and somewhat unequal, but usually much shorter than the achenia.—Elliott suspected this plant to belong to Actinomeris, of which there is no doubt: although the achenia are generally wingless, or obscurely margined near the summit, a few of them are sometimes furnished with a conspicuous wing on one or both sides: the heads resemble the preceding section.

§ 5? *Awns of the winged achenia obsolete: leaves opposite, decurrent on the stem: peduncles naked, elongated: rays* 3–4.—ACHÆTA, Nutt.

5. *A.? pauciflora* (Nutt.): hirsute; leaves elliptical, obtuse, serrulate; peduncles very long, bearing 2 heads; achenia with a shallow cup at the summit.—*Nutt.! in Sill. jour.* 5. *p.* 301, *& trans. Amer. phil. soc. l. c.*

East Florida, *Mr. Ware.*—Achenia obovate-oblong, with a conspicuous wing, which extends across the summit, and forms a slight cup.

Div. 3. COREOPSIDEÆ, *DC.* (excl. gen.)—Rays neutral, ligulate, or very rarely wanting. Achenia obcompressed (that is, flattened parallel with the scales of the involucre), not rostrate. Pappus 2- (rarely 4-) toothed or awned (sometimes obscurely coroniform), or none; the awns or teeth often upwardly, but never retrorsely hispid.

100. AGARISTA. *DC. prodr.* 5. *p.* 569; not of *Don.*

Heads many-flowered; the ray-flowers (8–10) neutral; those of the disk tubular, perfect. Involucre broadly campanulate, double; the exterior of (4, *DC.*) usually 5 broadly ovate somewhat foliaceous scales, united at the base; the interior of 8 oblong-ovate acute somewhat membranaceous scales, longer than the exterior series. Receptacle flat; the chaff membranaceous or somewhat hyaline, linear-lanceolate, deciduous with the fruit. Rays obovate-cuneiform, truncate at the summit, many-nerved. Corolla of the disk with a long and slender tube, and an infundibuliform-campanulate deeply 5-toothed limb. Branches of the style tipped with a short mucronulate cone. Achenia obcompressed; those of the ray sterile, (but often containing an abortive ovule) oval, glabrous, margined, destitute of pappus; of the disk oblong or elliptical, with a large basilar callus, densely villous with very long hairs, except the exterior surface in contact with the chaff. Pappus of 2 lanceolate 1-ribbed chaffy scales, arising from the angles of the achenia, about as long as the corolla, deciduous.—An annual very glabrous herb, with the habit of Coreopsis. Leaves alternate, pinnately and bipinnately parted; the rachis and segments linear. Heads showy, solitary, terminating the terete and naked summit of the stem or branches. Flowers of the (large) ray and of the disk golden yellow.

A. calliopsidea (DC.! l. c.)—*Hook. & Arn.! bot. Beechey, suppl. p.* 352. California, *Douglas!*—A very pretty plant, a foot or more in height; the bright golden rays about 8 lines long, crenulate at the summit. The chaff which subtends each fertile flower is confluent at the base with the obtuse callus of the achenium, and therefore necessarily deciduous with it: the exterior surface of the latter, which is covered with the chaff, is perfectly glabrous. The two squamellæ of the pappus are longer than the achenium, and are minutely striate, and obscurely denticulate, with a rigid axis, much in the manner of Palafoxia &c.; so that in this respect it accords with Heleniеæ; but its affinities are with Coreopsis, in which the section Leachia has a similar although much smaller pappus.

101. COREOPSIS. *Linn. gen. no.* 981 (excl. spec.); *Schkuhr, handb. t.* 260.

Coreopsis, Chrysostemma, & Calliopsis, *Less.*, *DC. &c.*

Heads many-flowered; the ray-flowers about 8 (wanting in one or two species), neutral; those of the disk tubular, perfect. Involucre double, each of about 8 (6–12) scales; the exterior foliaceous, narrower and sometimes more numerous, usually more or less spreading; the interior broader and often rather membranaceous. Receptacle flat or somewhat convex, chaffy; the chaff membranaceous, mostly deciduous with the fruit. Corolla of the disk with a slender tube, and an infundibuliform or campanulate 5-toothed limb. Branches of the style hairy at the summit, and terminated with an acute conical or subulate appendage, or truncate, or obtuse. Achenia obcompressed, not rostrate or tapering at the summit, often winged, 2-awned, 2-toothed, or somewhat 2-squamellate, or sometimes naked at the summit; the teeth or awns usually denticulate or hispid upwardly, but never downwardly.—Herbaceous (American) plants, with opposite or sometimes alternate divided or undivided leaves. Heads terminating the branches, solitary or corymbose. Rays (many-nerved) usually yellow: the corolla of the disk yellow or dark purple at the summit. Anthers blackish.

§ 1. *Branches of the style terminated by an acute cone, or an abrupt subulate appendage: corolla of the ray and disk (with one or two exceptions) yellow.* —Eucoreopsis.

* *Achenia wingless, cuneate-oblong, 1-ridged on each side, not incurved, 2- (rarely somewhat 3–4-) toothed or awned: chaff deciduous with the fruit: scales of the exterior involucre distinct, foliaceous, often numerous and irregular, reflexed: rays (rarely wanting) obovate-oblong, obtuse, entire or nearly so: leaves opposite, petioled, mostly ternately or pinnately divided or lobed; the segments serrate, very veiny in the manner of* Bidens; *the primary veins often running to the sinuses.*—Diodonta, *Nutt.*

These plants entirely accord with Bidens § Platycarpæa, except that the awns or teeth of the achenia are not retrorsely barbed, and are often nearly wanting. We do

[illegible]

not find sufficient characters to warrant their separation from Coreopsis; but if this be done, they might with more propriety be joined to Bidens (at least to the broad-fruited section), than erected into a distinct genus, as proposed by Nuttall.

† Rays none.

1. *C. discoidea:* glabrous; stem erect or ascending, diffusely branched; leaves on long petioles, ternately divided; the divisions ovate-lanceolate, acuminate, mostly petiolulate, coarsely serrate, the teeth mucronulate; the uppermost often simple; heads (small) somewhat paniculate-corymbose at the extremity of the branches, on very short peduncles; exterior involucre of 3–5 foliaceous linear or spatulate bracts, usually much longer than the heads; scales of the inner involucre appressed; achenia narrowly cuneiform-oblong or linear cuneiform, hairy; the awns or teeth erect, upwardly hispid, about the length of the corolla.—Bidens? aff. frondosa, *Sullivant! cat. pl. Columb. p.* 30 & 37.

Wet places and swamps, Columbus, Ohio, *Mr. Sullivant!* Feliciana, Louisiana, *Dr. Carpenter!* Western Louisiana, *Dr. Hale!* Texas, *Drummond!* Virginia, *Mr. Rugel?* July–Sept.—① ? Stem 1–2 feet high. Lower leaves sometimes undivided. Mature heads 3 or 4 lines long. Exterior involucre sometimes an inch long. Awns sometimes one-fourth or even one-third the length of the achenium, but often very much shorter, even in the same individual.—This plant has exactly the appearance and structure of a Bidens § Platycarpæa, except that the awns are hispid upwardly.

2. *C. bidentoides* (Nutt. under Diodonta): dwarf, diffusely branched, nearly glabrous; leaves lanceolate-linear, incisely toothed, tapering into a petiole; exterior involucre of 3 or 4 linear foliaceous scales often longer than the (small) heads; the inner 5–6, membranaceous, with colored (yellow) tips; awns slender, upwardly hispid, much longer than the corolla or the linear-oblong hispid (immature) achenium.—Diodonta (§? Heterodonta) bidentoides, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 361.

Near Philadelphia, *Nuttall!*—Founded on a single specimen of somewhat uncertain origin, with the aspect of a dwarf Bidens cernua: the small heads rather few-flowered; the long awns exserted: the intermediate angles sometimes with shorter awns. There appear to be no rays; what have been so described being the somewhat dilated and exserted yellow summits of the linear-oblong membranaceous chaff.

† † Heads radiate.

3. *C. aurea* (Ait.): glabrous or nearly so; stem striate; lower leaves 1–2-pinnately 3–5-divided; the upper 3-divided or sometimes simple; the divisions lanceolate, sharply or incisely serrate; heads paniculate; scales of the exterior involucre (mostly 8) linear-spatulate, slightly ciliate, not longer than the interior; achenia cuneiform or obovate-cuneiform, nearly glabrous, ciliate towards the summit, crowned with 2 short and triangular concave and somewhat chaffy teeth, or obscurely 4-toothed by the production of the intermediate angles, or with a somewhat coroniform pappus, from the confluence of the very short or obsolete teeth.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 252. C. coronata, *Linn. spec.* (*ed.* 2) 2. *p.* 1281? (excl. syn. *Plum.* & *Vaill.*); *Walt.! Car. p.* 215. Diodonta aurea & D. mitis, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 360.

α. subintegra: upper leaves mostly 3-divided, with the lateral divisions short and small; or the uppermost frequently simple, lanceolate, elongated, petioled, sharply serrate, or entire towards the tapering apex.—C. aurea, *Ait.! l. c.*, not of *Lindl.* C. arguta, *Pursh! fl.* 2. *p.* 567. C. ambigua, *Nutt.! in jour. acad. Philad.* 7. *p.* 75.

β. leptophylla: cauline leaves pinnately 3–5-divided; the terminal divisions linear, elongated, sparingly toothed; the lateral shorter, lobed or incised. —Diodonta leptophylla, *Nutt. in trans. Amer. phil. soc. l. c.*

γ. *incisa*: lower leaves bipinnately parted or divided; the upper pinnately 3–7-parted, the divisions incised or toothed.—C. mitis, *Michx.! fl.* 2. *p.* 138.

Wet places throughout the Southern States! originally described from a specimen collected in East Florida by *Bartram!* (v. sp. in *herb. Banks.*) Aug.–Oct.—②? Stem 2–4 feet high, at length much branched. Rays about 8, obovate-oval, rather large. Achenia 2–3 lines long, commonly not more than half as large as in C. trichosperma, and proportionally broader: the summit emarginate-truncate, or with very short somewhat hairy teeth.

4. *C. trichosperma* (Michx.): glabrous; stem somewhat 4-angled; leaves on short sparsely ciliate petioles, pinnately 5–7-parted, or divided; the divisions lanceolate or linear-lanceolate, serrate or incised; the uppermost leaves often 3–5-cleft, nearly sessile; heads paniculate-corymbose; scales of the exterior involucre about the length of the interior, linear or subspatulate, somewhat ciliate; achenia narrowly cuneiform-oblong, minutely and sparsely hairy, hispidly ciliate above, crowned with two triangular-subulate hispid teeth or stout awns.—*Michx.! fl.* 2. *p.* 139; *Pursh, fl.* 2. *p.* 568; *Ell. sk.* 2. *p.* 439; *Bigel.! fl. Bost. ed.* 2. *p.* 315; *DC.! prodr.* 5. *p.* 572. C. mitis, *Ell. l. c. & DC. l. c.*, as to char. C. aurea, *Lindl. bot. reg. t.* 1228.

β. achenia smaller; the teeth shorter, and sometimes obsolete!

Swamps, Massachusetts! and New York! to Carolina. Aug.–Oct.—②? Stem 1–2 feet high, much branched. Leaves membranaceous. Rays sometimes an inch long, showy, bright yellow. Achenia when mature 4–6 lines long, including the stout teeth, which sometimes taper into short erect awns, but are variable, and occasionally almost wanting: the prominent ridges also not unfrequently produced into obscure intermediate teeth, and all the teeth somewhat connected.—Either this or the preceding species is the C. coronata of the Linnæan herbarium (Virginia, *Sp. Pl.*); but the character, synonymy, and observations all relate to a West Indian plant, the Bidens pentaphylla, &c., *Plum. Amer. ed. Burm. t.* 53, *f.* 2, which is probably Bidens leucantha.—*Tickseed-Sunflower.*

5. *C. aristosa* (Michx.): minutely pubescent, or rarely glabrous; stem quadrangular below; leaves pinnately, the lower bipinnately 5–7-parted or divided, petioled; the divisions lanceolate, sharply serrate, incised, or incisely pinnatifid; heads paniculate-corymbose, numerous, peduncled; scales of the exterior involucre (10–12) about the length of the interior, linear-oblong, minutely hispid or ciliate; achenia flat, oblong-obovate, surrounded with an obscure wing or margin, strongly hispid-ciliate; the hispid awns slender, diverging, about the length of the achenium.—*Michx.! fl.* 2. *p.* 140; *DC. l. c.* C. aristata, *Willd. spec.* 3. *p.* 2253; *Pursh, l. c.* (excl. local. S. Car.) Diodonta aristosa, *Nutt.! in trans. Amer. phil. soc. l. c.*

Swamps, Michigan! Ohio! Missouri! to Western Louisiana! Aug.–Sept.—②? Stem 2–3 feet high, at length brachiately much branched. Rays large. Awns (sometimes 4 in number) somewhat variable in length, but longer and more slender than in any related species; the achenium also broader and flatter, with very hispid margins; the surface likewise sparingly hispid. If we mistake not, the achenia are sometimes awnless!

6. *C. involucrata* (Nutt.): minutely pubescent; stem quadrangular below; leaves 1–2-pinnately 3–7-parted; the divisions linear-lanceolate, incisely toothed; heads paniculate; scales of the exterior involucre (about 20) linear-lanceolate, hirsute (as well as the peduncles), longer than the interior; ovaries oval, hispid-ciliate, 2-toothed at the summit.—*Nutt.! in jour. acad. Philad.* 7. *p.* 74. Diodonta involucrata, *Nutt.! in trans. Amer. phil. soc. l. c.*

Arkansas, *Nuttall! Dr. Pitcher!*—Fruit unknown. The plant entirely resembles C. aristosa, excepting the outer involucre, and the short teeth of the ovary.

* * *Achenia obovate-oblong, wingless, obsoletely 2-toothed at the summit: involucre nearly as in* Chrysostemma; *the scales scarcely united: rays entire: appendages of the style ovate-triangular, with a short point: leaves opposite, ample, undivided, serrate, copiously feather-veined.*—Silphidium.

7. *C. latifolia* (Michx.): very smooth and glabrous; stem tall; leaves membranaceous, ovate or ovate-oblong, acuminate, irregularly dentate-serrate, with the teeth mucronate, abruptly contracted into short petioles, pale beneath; heads in small trichotomous corymbs; scales of the involucre 4–5 in each series; the exterior linear, spreading.—*Michx.! fl.* 2. *p.* 137.

High mountains of Carolina, *Michaux!* Mountains of Georgia and North Carolina, *Mr. Buckley!* Aug.—Lower leaves often 6 inches long and 4 broad. Heads small for the size of the plant: rays 5 or 6, large. Chaff oblong-linear. Corolla yellow. Anthers long, black. Mature achenia unknown: the flat ovaries are obscurely margined.

* * * *Achenia elliptical, narrowly winged and somewhat incurved when mature, emarginate: the summit of the wing and the narrow emargination denticulate-lacerate: chaff nearly filiform, somewhat deciduous: scales of the exterior involucre linear, obtuse, foliaceous, spreading, as many as the interior* (6–8) *but much smaller, all united at the base: rays obtuse, entire: corolla of the disk yellow, turning brownish: leaves opposite, petioled, 3-divided, or the lowest pinnately 5-divided; the divisions entire, feather-veined: heads somewhat corymbose, exhaling the anisate odor of* Lepachys *when bruised!*—Chrysostemma, *Less.*

8. *C. tripteris* (Linn.): smooth and glabrous; stem tall, simple, or corymbose above; divisions of the leaves lanceolate, acute, with very scabrous margins, and with an obscure marginal nerve; heads on short peduncles.—*Linn.! spec.* 2. *p.* 908; *Michx.! fl.* 2. *p.* 138; *Willd.! spec.* 3. *p.* 2253; *Ell. sk.* 2. *p.* 442. Anacis tripteris, *Schrank.* Chrysostemma tripteris, *Less.! syn. p.* 227; *DC.! prodr.* 5. *p.* 568; *Hook. bot. mag. t.* 3553.

β. leaves minutely scabrous-puberulent.

Dry soil, and near streams, Michigan! and Missouri! to Florida! and Louisiana! *β.* Western Louisiana, *Dr. Veatch!* Aug.–Oct.—♃ Stem 4–8 feet high. Heads including the spreading rays an inch or more in diameter.—The denticulate fringe at the summit of the achenia is nearly confined to the wing, so that the pappus can scarcely be called coroniform. The style is nearly as in C. senifolia, delphinifolia, &c., in which species, moreover, the summit of the wing is more or less denticulate.

* * * * *Achenia oblong, narrowly winged, straight or a little incurved, minutely 2-toothed or nearly naked and truncate at the summit: chaff linear-filiform, persistent: scales of the exterior involucre oblong-linear, obtuse, about the length of the interior, all united at the base: rays usually acute and entire: leaves opposite, sessile, mostly 3-divided, so that each pair resembles a whorl of six; the divisions entire or lobed, never serrate, 1-nerved.*—Gyrophyllum. (Eucoreopsis & Gyrophyllum, *Nutt.*, excl. spec.)

9. *C. senifolia* (Michx.): softly and minutely puberulent; stem quadrangular below; leaves closely sessile, 3-divided; the divisions oval-lanceolate, membranaceous, 1-nerved, obscurely veined, entire, scarcely acuminate;

rays lanceolate or oblong, rather acute, sometimes toothed; disk yellow; achenia narrowly elliptical or slightly cuneiform, with 2 minute often deciduous subulate teeth, the narrow wing slightly serrulate towards the summit.—*Michx.! fl.* 2. *p.* 138; *Pursh, fl.* 2. *p.* 568; *Ell.! sk.* 2. *p.* 438; *Nutt.! in jour. acad. Philad.* 7. *p.* 77; *DC.! prodr.* 5. *p.* 572. C. major, *Walt. Car. p.* 214.

β. stellata: glabrous; divisions of the leaves varying from oval-lanceolate (and acute or acuminate at both ends) to rather narrowly lanceolate.—C. stellata (*herb. Banks*); *Nutt.! in jour. acad. Philad.* 7. *p.* 76. C. senifolia, *Hook. bot. mag. t.* 3484. (Varies rarely with the middle division of the leaves 3-parted, according to Elliott.)

Dry woods and in sandy soil, *a.* Virginia to Georgia! in the low and middle country, and St. Louis, *Drummond!* *β.* Virginia! to Alabama! Kentucky! &c. abounding in the upper country. July–Aug.—♃ Divisions of the leaves 1–3 inches long, simulating a whorl of 6 leaves; the uppermost often undivided. Rays an inch long.

10. *C. delphinifolia* (Lam.): **glabrous or minutely puberulent; leaves closely sessile, 3-divided; the divisions entire or 2–3-parted, the middle one often pinnately 5-parted; lobes lanceolate-linear, rather rigid; rays often acute; disk-flowers brownish; achenia obovate-elliptical; the narrow wing minutely denticulate at the summit.**—*Lam. dict.* 2. *p.* 108; *DC.! l. c.* C. verticillata, *Ehrh. l. c.; Willd. l. c.; Bot. mag. t.* 156; *Schkuhr, handb. t.* 260; *Pursh, l. c.; Ell. l. c.* C. verticillata *β.* linearis, *Michx.! l. c.* C. Wrayi, *Nutt.! in jour. acad. Philad.* 7. *p.* 76. Ceratocephalus delphinifolius, *Vaill.*; *Ehret, pict. t.* 9, *f.* 1.

β. rigida: leaves (of the branches often simple) 3-divided; the divisions varying from narrowly linear to linear-lanceolate, entire, or the central one 3-cleft.—C. rigida, *Nutt.! gen.* 2. *p.* 180 (under C. senifolia), *& in trans. Amer. phil. soc. l. c.*

Dry soil, and in pine woods, Virginia to Georgia! Alabama! and Middle Florida! chiefly along the mountains. Aug.—♃ Stem 1–2 feet high.—A distinct species, very variable in the width of the foliage (the divisions from 1 to 3 lines broad, rigid, very commonly undivided), and intermediate between C. verticillata and C. senifolia *β.* stellata.

11. *C. verticillata* (Linn.): **glabrous; stem branched; leaves closely sessile, 3-divided; the divisions pinnately or bipinnately parted; the segments very narrowly linear, obtuse; rays acute at each end, or rarely obtuse and 2–3-toothed; corolla of the disk yellow; achenia obovate-cuneiform, slightly winged, minutely 2-toothed at the summit.**—*Linn.! spec.* 2. *p.* 907 (fide *herb.!* & ex syn. *Gronov.!* & *Pluk.!* excl. syn. *Vaill.*); *Lam. dict.* 2. *p.* 108. C. verticillata *β.* tenuifolia, *Michx.! fl.* 2. *p.* 139. C. tenuifolia, *Ehrh. beitr.* 7. *p.* 168; *Willd.! spec.* 3. *p.* 2252; *Schkuhr, handb. t.* 260; *Pursh, l. c.; Ell. sk.* 2. *p.* 439; *Bart. fl. Amer. Sept. t.* 73; *DC.! prodr.* 5. *p.* 572. Chrysanthemum Marianum, &c., *Pluk.! mant. t.* 344, *f.* 4.

Moist places and margin of swamps, Michigan (Lake Huron, and Sault St. Marie, *Dr. Pitcher!*) Ohio, Maryland! to Arkansas! in the Southern States mostly confined to the mountainous districts. July–Sept.—♃ Stem 1–3 feet high, slender, strongly striate. Leaves appearing as if in whorls of six, whence the Linnæan name, although not strictly correct, is by no means inappropriate, and ought not to be superseded; the segments and rachis almost filiform. Scales of the exterior involucre 8–10, linear or oblong-linear, usually about the length of the interior, rarely only 3 or 4 and almost as long as the rays. Rays bright yellow, 8–12 lines long, narrow; in the cultivated plant sometimes oblong-oval, obtuse and deeply 2–3-toothed.

12. *C. palmata* (Nutt.): **glabrous or nearly so; stem simple or slightly**

branched above, angled and striate; leaves approximate, rigid, sessile, deeply 3-cleft; the lobes rather obtuse, with scabrous margins, linear, entire, or the middle one often 3-lobed; rays obovate-oblong, sometimes toothed at the apex; corolla of the disk yellow; achenia linear-oblong or elliptical, slightly incurved when mature, narrowly winged, truncate, and crowned with 2 short (often deciduous or obscure) teeth.—*Nutt.! gen.* 2. *p.* ~~573~~ 180; *Torr.! in ann. lyc. New York*, 2. *p.* 215; *DC. l. c.* C. pauciflora, *Lehm.! ind. sem. hort. Hamb.* 1833; *DC. l. c.* C. præcox, *Fresenius! ind. sem. hort. Franc.* 1838. Calliopsis palmata, *Spreng. syst.* 3. *p.* 611.

Plains and prairies, Michigan! and on the Mississippi above the Falls of St. Anthony, (*Dr. Houghton!*) to Illinois! Missouri! Arkansas! and Louisiana! June–July.—♃ Stem 1–2 feet high, rather rigid. Leaves about 2 inches long, with a cuneiform circumscription, 3-lobed below the middle or nearly 3-parted, narrowed and 3-nerved at the base; the lobes more or less divaricate; the lateral ones frequently cleft in the lower leaves. Heads solitary, or sometimes several, on short peduncles, fully as large as in C. delphinifolia; the rays bright yellow, sometimes entire and a little acute, often toothed, especially in cultivation. Chaff filiform, slightly dilated at the summit, shorter than the flowers.

* * * * * *Achenia nearly orbicular, broadly winged and incurved when mature, often minutely tuberculate, usually furnished with a large callus or tubercle on the inner side at the base and summit, crowned with 2 short squamellate denticulate (often obsolete) teeth: chaff deciduous with the fruit: exterior involucre about the length of the interior: rays (large) obovate or cuneiform, coarsely 3–5-toothed or incised at the summit: leaves opposite, or the uppermost rarely alternate, entire or divided often in the same individual, not serrate, the lower ones petioled: heads on long naked peduncles.*— Leachia, *Cass.* (Coreopsoides, *Mœnch.* Chrysomelea, *Tausch*, *Nutt.*)

13. *C. auriculata* (Linn.): pubescent with spreading or retrorse hairs, or at length somewhat glabrous; radical and lower leaves on slender hairy petioles, some of them oval or roundish and entire, others 3-parted or divided, with the lateral divisions much smaller; the uppermost on short petioles or nearly sessile, oblong or oval-lanceolate; heads mostly solitary, on elongated glabrous peduncles; scales of the exterior involucre oblong-linear or lanceolate, at length spreading; achenia nearly orbicular, broadly winged, strongly incurved when ripe, often minutely muricate-tuberculate on one or both sides, crowned with 2 very short ciliate-denticulate somewhat squamellate teeth, which are sometimes deciduous or obsolete.

α. cæspitose and somewhat stoloniferous; stems short and slender, simple or sparingly branched near the base; leaves at first hairy, at length nearly glabrous, entire and roundish-oval, or 3-parted, with the lateral divisions very small, or sometimes either pinnately or pedately 5-divided on the same individual; the upper leaves rather acute; rays oblong-cuneiform, coarsely and unequally 4–5-toothed; wing of the achenium entire or very minutely denticulate.—C. auriculata, *Linn.! spec.* 2. *p.* 908 (ex syn. *Gronov.*, *Moris.*, & *Pluk.!*); *Ait.! Kew.* (*ed.* 1) 3. *p.* 252; *Michx.! fl.* 2. *p.* 133; *Pursh, l. c.* C. auriculata *var.* diversifolia, *Ell.! sk.* 2. *p.* 437. C. diversifolia, *DC.! prodr.* 5. *p.* 571; not of *Jacq.*, nor of *Hook.* Chrysanthemum hirsutum Virginianum &c., *Pluk.! alm. t.* 83, *f.* 5, & *especially*, *t.* 242, *f.* 4. C. Virginianum trifolatum &c., *Moris. hist.* 3. *sect.* 6. *t.* 3, *f.* 45. (good figure.)

β. leaves oval-oblong or ovate-oblong, all but the uppermost on slender hairy petioles, mostly obtuse, all entire; rays oval-oblong, rather acute, slightly 2-toothed.

γ. stem elongated, and with the leaves mostly softly pubescent, more or less branched; lower leaves 3-divided or parted, the terminal division 3 or 4 times larger than the lateral ones; the upper often entire, oblong-lanceolate, rather acute, slightly petioled; rays oval-cuneiform, toothed at the summit.—C. auriculata, *Schkuhr, handb. t.* 260; *Willd.! spec.* 3. *p.* 2256; *DC.! l. c.* C. pubescens, (and C. auriculata?) *Ell.! l. c.* Coreopsoides lanceolata, *Mœnch, meth. p.* 594. Anacis auriculata, *Schrank, in acad. Münch. nat.* 5. *p.* 7, ex *DC.* Leachia trifoliata, *Cass. in dict. sci. nat.* 25. *p.* 389. Chrysomelea auriculata, *Tausch. hort. Canal.*, ex *DC.*

δ. stem stout, very pubescent below; leaves pubescent or nearly glabrous; the lower 3-parted with small lateral segments, or not unfrequently entire; the upper nearly sessile, entire, ample (3–4 inches long, and 1 to nearly 2 inches broad), oval-lanceolate or oblong; rays laciniate-toothed.—C. auriculata, var., *Gray! in Sill. jour.* 42. *p.* 45.

Dry soil, in rich woods and along streams, Virginia! and Kentucky! to Middle Florida! and Western Louisiana! more abundant in the mountainous districts. *δ.* Mountains of North Carolina! May–Sept.—♃ Like most plants which flower throughout the summer, this species presents many variations. We have distinguished only the more important, assuming the smaller and vernal form as the type, which is moreover the plant of Plukenet, Clayton, &c. The stoutest and large-leaved var. *δ.* resembles some of the garden states, which have been long in cultivation. Ripe achenia dark brown.

14. *C. lanceolata* (Linn.): pubescent or nearly glabrous; stems short, ascending, often branched near the base; leaves entire, with ciliate or scabrous margins; the radical and lower cauline oblanceolate or spatulate-oblong, tapering into hairy petioles; the upper oblong-lanceolate or linear-lanceolate, sessile, slightly connate at the base (the uppermost rarely alternate); heads mostly solitary, on very long naked peduncles; scales of the exterior involucre ovate-lanceolate; rays deeply 4–5-toothed or incised at the summit; achenia nearly orbicular, incurved when mature, broadly winged, crowned with 2 very short auriculiform denticulate squamellæ, which when old become (especially in cultivation) subulate teeth.—*Linn.! spec.* 2. *p.* 908; *Michx.! fl.* 2. *p.* 136; *DC.! prodr.* 5. *p.* 570. Coreopsis, *Linn.! hort. Cliff. p.* 420. Leachia lanceolata, (& L. crassifolia?) *Cass. l. c.* Chrysomelea lanceolata, *Tausch, l. c.*

α. succisæfolia (DC.): leaves glabrous or slightly pubescent, more or less ciliate (the stem often elongated and more branched in cultivation).—Bidens succisæfolio, radio amplo laciniato, *Dill. Elth. t.* 48, *f.* 56.

β. angustifolia: leaves glabrous, narrow, mostly ciliate; the cauline ones linear; stem short, or rarely somewhat elongated.—C. lanceolata *β.* glabella, *Michx.! l. c.; DC.! l. c.* (chiefly.) C. lanceolata, *Hook.! fl. Bor.-Am.* 1. *p.* 311.

γ. villosa (Michx.! l. c.): very hairy or villous throughout; the peduncles and involucre (and sometimes the surface of the spatulate or oblong-lanceolate leaves) becoming glabrous.—*Pursh, l. c.; DC.! l. c.* C. crassifolia, *Ait. Kew.* (*ed.* 1) 3. *p.* 253 (fide *Pursh, &c.*); *Ell. sk.* 2. *p.* 434. C. oblongifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 76.

Rather damp soil, Virginia! and N. Carolina! to Florida! Western Louisiana! and Missouri! North shore of Lake Superior, *Dr. Pitcher!* and Lake Huron, *Dr. Todd*, fide *Hook.* June–Aug.—♃ or ② ? Heads showy: the rays an inch long, bright yellow. Achenia blackish when mature.

15. *C. grandiflora* (Nutt.): glabrous; stem slender, striate-angled, simple or branching; leaves on hirsute or somewhat ciliate petioles; the radical lanceolate or linear-spatulate, or sometimes divided; the cauline 1–2-pinnately or ternately 3–5-parted, with the segments or lobes narrowly linear or lanceolate, canaliculate; the uppermost sessile; heads solitary, on long naked peduncles; scales of the exterior involucre lanceolate or ovate-lanceolate,

about the length of the inner, acute or acuminate; rays 4–5-cleft at the apex; achenia orbicular, winged, incurved, crowned with 2 short denticulate-fimbriate squamellate teeth.—*Nutt.! in hort. Barclay, & in trans. Amer. phil. soc. l. c. p.* 358; *Hogg, in Sweet, Brit. fl. gard. t.* 175; *DC.! prodr.* 5. *p.* 572.

β. longipes: heads rather smaller; exterior involucre shorter than the inner; radical leaves commonly undivided.—C. longipes, *Hook.! bot. mag. t.* 3586; *DC. prodr.* 7. *p.* 290.

γ. subintegrifolia: radical and lowest cauline leaves narrowly linear or lanceolate, entire; one or more of the upper 3-parted, the lateral segments smaller; exterior involucre usually shorter than the inner.—C. Boykiniana, *Nutt.! in trans. Amer. phil. soc. l. c.*

Plains of Arkansas, Western Louisiana, and Texas, *Nuttall! Dr. Pitcher! Dr. Leavenworth! Dr. Engelmann! Drummond!* (*α.* & *β.*) Also Alabama, *Dr. Gates! γ.* Texas, *Drummond!* Southern Missouri, *Dr. Engelmann!* Georgia, *LeConte! Dr. Boykin!* July–Sept.—♃ Plant 8–12 inches high. Heads resembling those of C. lanceolata. Chaff attenuate-filiform. Achenia brownish, often minutely tuberculate on one or both sides, as in all the species of this section.

16. *C. coronata* (Hook.): stem slender, erect or diffusely branched, naked and glabrous except near the base; leaves flaccid, hairy, on slender petioles, spatulate-oval or oblong, obtuse, entire, or the lowest 3–5-divided; the lateral divisions oblong, small; scales of the exterior involucre lanceolate, ciliate, shorter than the inner; rays 5-cleft at the apex, "marked with a purple spot at the base"; achenia oval, incurved, narrowly winged, crowned with 2 (2–3) squamellate teeth.—*Hook.! bot. mag. t.* 3460, not of *Linn. &c.*

Texas, *Drummond! Mr. Lindheimer!*—① Plant 8–15 inches high, either simple or branched near the base; which alone is leafy: the naked portion, or peduncle, 6–10 inches long. Heads smaller than in C. lanceolata, &c. Limb of the leaves an inch long.—The rays are sometimes entirely yellow.

§ 2. *Branches of the style truncate and slightly penicillate at the apex: achenia naked at the summit, or with two short or obscure teeth, more or less incurved, often minutely tuberculate: chaff deciduous with the fruit: exterior involucre small: rays mostly 2-colored (yellow with a brownish-purple spot at the base), toothed: disk-flowers dark purple or brownish: leaves opposite, 1–2-pinnately divided, the lobes entire.*—Calliopsis, Reichenb., DC.

* Achenia wingless.

17. *C. Drummondii:* annual, more or less pubescent or hirsute with jointed hairs; leaves pinnately 3–5-divided, or sometimes simple; the divisions (or leaves) oval or oblong, entire, or with the margin undulate; scales of the exterior involucre lanceolate-acuminate, a little shorter than the interior; rays unequally 5-toothed, twice the length of the involucre; achenia obovate, wingless, strongly incurved, naked or minutely 2-toothed at the apex, smooth or obscurely tuberculate.—C. diversifolia, *Hook.! bot. mag. t.* 3474, not of *DC.* Calliopsis Drummondii, *Don, in Sweet, Brit. fl. gard. ser.* 2. *t.* 315.

β. leaves mostly pinnately 3–7-divided; the divisions entire, or frequently 3-parted.

Texas, *Drummond!*—Stem 6–20 inches high, branched above. Rays with a small purplish spot at the base. Achenia much incurved.

18. *C. tinctoria* (Nutt.): annual, glabrous; lobes of the leaves linear-oblong and linear; scales of the exterior involucre very short, acute; rays 3-lobed at the summit, twice the length of the interior involucre; achenia oblong, wingless, minutely tuberculate on both sides, or sometimes nearly smooth.—*Nutt.! in jour. acad. Philad. p.* 114; *Bart. fl. Amer. Sept.* 2. *t.* 45; *Bot. mag. t.* 2512; *Bot. reg. t.* 846; *Brit. fl. gard. t.* 72. Diplosastera tinctoria, *Tausch, hort. Canal.*, ex *DC.* Calliopsis bicolor, "*Reichenb. mag. t.* 70"; *Spreng. syst.* 3. *p.* 611. C. tinctoria, *DC.! prodr.* 5. *p.* 568; *Hook. bot. mag. t.* 3511. (*β.* atropurpurea).

Damp prairies, from the Upper Missouri, (*Mr. Nicollet!*) to Western Arkansas, *Nuttall! Dr. Pitcher! Dr. Leavenworth! Dr. Engelmann!* Western Louisiana, *Dr. Hale!* Texas, *Drummond! Dr. Leavenworth!* (Very common in cultivation.) July–Oct.—Stem 1–3 feet high. Rays golden yellow, towards the base deep brownish-purple: in cultivation nearly the whole ray sometimes becomes dark purple, as figured in *Bot. mag. t.* 3511.

* * Achenia winged.

19. *C. Atkinsoniana* (Dougl.): perennial, glabrous; lobes of the leaves linear or linear-spatulate; scales of the exterior involucre linear-oblong, obtuse, somewhat scarious; rays obtusely 3-toothed, thrice the length of the interior involucre; achenia elliptical, distinctly winged, crowned with 2 very short (often deciduous) subulate teeth.—*Dougl. in Lindl.! bot. reg. t.* 1376. Calliopsis Atkinsoniana, *Hook.! fl. Bor.-Am.* 1. *p.* 311; *DC.! prodr.* 5. *p.* 568.

Oregon, near the coast, *Douglas! Dr. Scouler!*—This species, now common in the European gardens, appears to be the only one indigenous to Oregon, or any part of the country west of the Rocky Mountains. It greatly resembles C. tinctoria, but is a larger plant.

20. *C. cardaminefolia*; annual, glabrous; lobes of the leaves obovate-oblong, of the upper linear-spatulate or narrowly linear; scales of the exterior involucre very short, rather obtuse; rays 3-cleft at the summit, twice the length of the interior involucre; achenia broadly oval, winged, often with 2 short subulate teeth, smooth or very minutely tuberculate.—Calliopsis cardaminefolia, *DC.! l. c.*

β. angustiloba: lobes of the leaves all narrowly linear; achenia tuberculate.

Texas, *Berlandier!* *β.* Western Louisiana, *Dr. Hale!*—The young achenia are usually crowned with two subulate teeth, which are united with the wing, and sometimes project a little beyond it.

§ 3. *Branches of the style truncate or terminated with a very obtuse cone: achenia straight or slightly incurved, crowned with two upwardly serrulate or hispid awns or subulate teeth; the winged margin mostly fringed or dissected: chaff deciduous with the fruit: exterior involucre small: rays about 3-toothed or cleft at the summit, yellow: disk-flowers dark purple: stem naked and dichotomously corymbose at the summit: leaves opposite or alternate (often in the same species), entire or sparingly lobed.*—**Coreoloma.**

* *Achenia slightly incurved, surrounded with a broad entire wing.*—Calliopsidium.

21. *C. Leavenworthii*: glabrous; stem terete, slender, dichotomously branched at the summit; leaves opposite, narrowly linear, entire, or frequently with two lateral linear lobes; the lower ones petioled; scales of the exterior involucre very short, ovate-lanceolate; rays 3-toothed; achenia (in-

cluding the broad whitish wing) roundish oval, crowned with 2 awn-like teeth, which exceed the wing.

Tampa Bay, and near Fort Drane, Florida, *Dr. Leavenworth!*—② or ♃? Stems often several from the same root, 1–2 feet high. Lower leaves 3–4 inches long, scarcely a line wide. Rays 5–6 lines in length, bright yellow: disk brownish-purple. Achenia smooth; the wing of each side as broad as the achenium itself: the awns or teeth minutely serrulate, somewhat exceeding the wing.—Differs from the Calliopsides with winged achenia only in the more conspicuous teeth, and the entirely yellow rays.

* * *Achenia not incurved; the margin serrulate, or with a lacerate or pectinately dissected wing.* (Eublepharis & Rhabdocaulis, *Nutt.*, excl. spec.)

22. *C. gladiata* (Walt.): glabrous; stem terete, striate, dichotomously corymbose at the summit; leaves somewhat fleshy, alternate, remote, entire, or the upper ones frequently with two lateral lobes; the lowermost oblong-lanceolate, sometimes 1–2-ternately-parted, tapering into a long margined petiole partly clasping at the base; the upper sessile, elongated lanceolate or linear-lanceolate, mostly acute; bracts alternate or opposite, subulate; scales of the exterior involucre ovate-lanceolate; rays obovate, 3-lobed at the summit; achenia narrowly elliptical or somewhat obovate-oblong, surrounded by a conspicuous pectinate fringe, crowned with 2 slender serrulate-hispid awns about half the length of the corolla.—*Walt.! Car. p.* 215; *Nutt.! gen.* 2. *p.* 180; *Ell. sk.* 2. *p.* 444; *DC. l. c.?* C. dichotoma, *Michx. l. c.*, partly?

Damp pine barrens, North Carolina! to Georgia! and Florida! Aug.–Sept.—♃ Stem 2–3 feet high, naked above, 2–3 times dichotomous at the summit, and often bearing 9–12 heads on slender pedicels. Lower leaves, including the petiole, often 8–10 inches long, somewhat veined: the upper 4–5 inches long, and decreasing upwards, 1-nerved: the uppermost rarely opposite. Achenia glabrous, or minutely papillose-scabrous, about twice the length of the awns; the linear segments of the fringed margin often as long as the achenium itself is wide, appearing like a dissected wing.

23. *C. angustifolia* (Ait.): glabrous; stem acutely 4-angled, virgate, slender, dichotomously branched above; leaves entire, opposite, or the lower frequently alternate; the radical and lowest cauline oblanceolate or spatulate, tapering into a slender petiole; the others spatulate-linear, obtuse, narrowed towards the base, sessile, the uppermost bract-like; scales of the exterior involucre ovate, obtuse; rays obovate-cuneiform, 3-lobed at the summit, the middle lobe largest; achenia elliptical, surrounded by a lacerate-fimbriate wing, crowned with 2 short upwardly hispid awns.—*Ait.! Kew.* (*ed.* 1) 3. *p.* 253. C. dichotoma, *Michx. fl.* 2. *p.* 137, (at least in part.) C. linifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 75. C. (Rhabdocaulis) angustifolia & linifolia, *Nutt.! in trans. Amer. phil. soc. l. c.*

Moist pine barrens, &c., Florida, *Bartram! Dr. Chapman! Mr. Croom!* Alabama, *Dr. Gates! &c.* New Orleans, *Dr. Ingalls!* Western Louisiana, *Dr. Hale!* Borders of Texas, *Dr. Leavenworth!* N. Carolina, (near Wilmington?) *Mr. Curtis!* June?–Sept.—♃ Stem 1–3 feet high, grooved between the angles. Leaves more frequently all opposite, rarely all alternate, rather thick and opaque, often obscurely punctate; the cauline ones short (1–2 inches long), and becoming smaller towards the summit; those of the branches reduced to spatulate-linear bracts. Heads loosely dichotomous-corymbose; the slender pedicels spreading. Corolla of the disk dark purple, much longer than the setiform awns of the achenia.

24. *C. integrifolia* (Poir.): glabrous; stem terete below, striate-angled and often corymbose above; leaves ovate or oval-lanceolate, entire, with a

whitish and somewhat cartilaginous smooth or ciliate-scabrous margin; the lower ones mostly alternate, and tapering into a margined somewhat clasping petiole, the uppermost much smaller, opposite, sessile; heads few; scales of the exterior involucre oblong-linear, obtuse, scarcely half the length of the interior; rays narrowly cuneiform, 3-lobed, 3–4 times the length of the involucre; achenia (immature) narrowly cuneiform-oblong, wingless, the margin minutely ciliolate-hispid, crowned with 2 very short upwardly serrulate awns.—*Poir. suppl.* 2. *p.* 252; *DC.! prodr.* 5. *p.* 570. C. Œmleri, *Ell. sk.* 2. *p.* 436*?*

Carolina, *Bosc!* Georgia, "near the junction of Broad and Saluda Rivers, *Mr. Œmler*," ex *Elliott.* Near Columbus, *Dr. Boykin!* and on the banks of Spring Creek, Decatur County, in the same State, *Dr. Chapman!*—① ? Stem 2–3 feet high. Lower leaves 3–5 inches long, with a petiole nearly the same length, thick, rather acute at each end, with a conspicuous midrib, obscurely feather-veined, varying in outline from ovate or oval to elongated lanceolate; the upper shorter and often opposite, on short connate petioles; the uppermost reduced to bracts, always opposite. Rays bright yellow, nearly an inch long. Corolla of the disk dark purple at the summit. Branches of the style dark purple, terminated by a very obtuse or capitate minutely hairy cone. Awns rather stout, scarcely one-fourth the length of the immature achenium.

§ 4. *Branches of the style truncate or terminated with a very obtuse cone: achenia as in* Coreoloma, *or naked and wingless: exterior involucre small: rays 3–5-toothed, rose-red: the disk-flowers light yellow: leaves alternate or opposite, undivided, and entire.*—COSMELLA.

25. *C. nudata* (Nutt.): glabrous; stem terete, dichotomously branched above; leaves few and remote, alternate, terete, subulate; the lower elongated; the upper very short; scales of the exterior involucre much shorter than the interior; rays (rose-red) broadly cuneiform-obovate, crenately 3–5-toothed; achenia elliptical, surrounded with a narrow laciniately lacerate wing, crowned with two short upwardly fimbriate-serrulate awns.—*Nutt.! gen.* 2. *p.* 180, *& in trans. Amer. phil. soc. l. c.* Calliopsis nudata, *Spreng. syst.* 3. *p.* 611.

Near St. Mary's, West Florida, *Baldwin.* Apalachicola, *Dr. Chapman!* —♃ ? Stem 2–3 feet high, somewhat corymbosely branched, and bearing 3 to 6 or more showy heads on naked pedicels. Leaves, or rather petioles without lamina, partly clasping at the base; the lower ones (2–3) about 6 inches long, subulate-filiform; the uppermost reduced to minute bracts. Rays showy, about 8 lines long. Lobes of the corolla of the disk puberulent internally. Anthers brownish. Branches of the style yellowish, terminated by a short, pubescent, rather acute cone. Awns scarcely exceeding the wing of the achenium.—This plant resembles Cosmos in the color of the flowers, and the section Coreoloma in the achenium and style, dichotomously corymbose heads, &c. The following species is a Calliopsis except in the color of the flowers.

26. *C. rosea* (Nutt.): stem leafy, mostly branched; leaves opposite, narrowly linear, entire, obscurely 1-nerved, narrowed and slightly ciliate at the base; heads on short peduncles; exterior involucre very small; rays (pale red, rose-color, or sometimes white) oblong, slightly 3-toothed; achenia oblong, wingless, somewhat incurved when mature, and obscurely tuberculate on the margins, crowned with an obscure truncate coroniform pappus.—*Nutt.! gen.* 2. *p.* 179, *& trans. Amer. phil. soc. l. c.; Bigel.! fl. Bost. ed.* 3. *p.* 338*; Bart. fl. Amer. Sept. t.* 12. Calliopsis rosea, *Spreng. syst.* 3. *p.* 611.

Sandy or grassy swamps, from Plymouth, Massachusetts, *Mr. Oakes! Mr. Russell!* Nantucket, *Mr. T. A. Green!* and Rhode Island, *Prof. Bailey!* to New Jersey! and Georgia. July–Aug.—♃ Plant slender, 8–15 inches high. Heads small. Appendages of the style (yellow) slightly capitate and truncate.

C. *trifida* (Lam. ill. t. 704) is of unknown origin, and is unlike any North American species.

C. *flexicaulis* (Raf.): "stem simple, flexuous; leaves linear, thickened, the lower ones attenuated, the upper ones opposite; flowers terminal, crown-flowered: floscules 4-fid," *Raf. in med. repos.* (*hex.* 2) 5. *p.* 361, (South New Jersey) is not likely to be identified.

C. *aspera* (Pursh): "leaves lanceolate-linear, rough; the upper alternate, the lower opposite; stem one-flowered," *Pursh, fl.* 2. *p.* 570, is said to have been described from a Maryland specimen in the Banksian herbarium; where, however, we did not recognize the species.

C. *acuta* (Pursh, l. c.): "leaves ovate-lanceolate, acute, denticulate, somewhat hairy, alternate; flowers corymbose-paniculate," which we were also unable to identify in the Banksian herbarium, is perhaps Actinomeris squarrosa.

C. *alata* (Pursh, l. c.) is doubtless Verbesina Siegesbeckia.

PERAMIBUS, *Raf.*—Under this name Rafinesque founded a genus in his *Annals of Nature* (1820), which is chiefly characterized by having triangular naked achenia, and the scales of the involucre alternately longer and shorter in a single series. It was established on a Kentuckian plant, P. hirtus, which is Rudbeckia triloba! To the genus he referred, somewhat doubtfully, several species which he had not seen, viz: his own Coreopsis scabra of the *Florula Ludoviciana*, the C. acuta, *Pursh*, and the C. palmata, rosea and nudata of Nuttall, none of which accord with his character.

Div. 4. BIDENTIDEÆ, *Less.*, *DC.*—Rays neutral, ligulate, or sometimes wanting. Achenia obcompressed, or often tetragonal or terete, and rostrate. Pappus of 2–4 (rarely 5–6) retrorsely barbed or scabrous hispid awns.

102. COSMOS. *Cav. ic.* 1. *p.* 9, *t.* 14 & 79; *DC. prodr.* 5. *p.* 606.

Heads many-flowered; the ray-flowers (about 8) neutral; those of the disk tubular, perfect. Involucre double, each of 8–10 acute or acuminate scales, more or less united. Receptacle flat; the chaff membranaceous, attenuate-acuminate. Corolla of the disk with a slender tube and a 5-toothed limb. Anthers with a scarious cordate appendage. Branches of the style thickened and very hairy or bearded at the summit, terminated by a subulate cone. Achenia tetragonal or terete, attenuate or rostrate at the summit, sometimes stipitate, crowned with 2–4 retrorsely barbed or scabrous-hispid deciduous awns.—Annual or perennial (mostly Mexican) branching herbs, with opposite 1–2-pinnatifid or divided leaves, the lobes mostly entire. Heads on slender peduncles terminating the branches. Rays purple, violet, or rose-color: disk-flowers yellow; the anthers brown.

1. C. *caudatus* (H. B. & K.): glabrous or slightly hairy; leaves petioled, bipinnately parted; the segments lanceolate, feather-veined, ciliate-scabrous,

cuspidate; scales of the involucre scarcely united; the exterior linear-lanceolate, cuspidate, ciliate, spreading, nearly equalling the scarious or colored interior series; chaff obtuse; achenia 4-angled, tapering into a very long upwardly scabrous beak, crowned with 2 spreading awns.—*H. B. & K. nov. gen. & spec.* 4. *p.* 240; *DC.! prodr.* 5. *p.* 606. Bidens Berteriana, *Spreng. syst.* 3. *p.* 454; *DC.! in Wight, contrib. p.* 19.

Key West, *Mr. Blodgett!* A common West Indian species; also naturalized in the East Indies.—♃ Rays rose-color, 3-cleft at the summit, scarcely longer than the involucre. Achenia (about 20) nearly an inch long.

103. COSMIDIUM. *Torr. & Gray, mss.; Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 361.

Heads many-flowered; the ray-flowers about 8, neutral, or sometimes wanting; those of the disk tubular, perfect. Involucre double, each of 8 scales; the interior oblong-ovate, somewhat membranaceous, united to the middle, much larger than the exterior. Receptacle flat; the chaff scarious, oblong, obtuse, with 2 approximate colored nerves, shorter than the flowers, partly investing the achenia, and deciduous with them. Corolla of the disk with a very slender tube, and a deeply 5-cleft limb; the segments long and linear, recurved. Anthers and style as in Cosmos (the base of the latter dilated into a conspicuous bulb.) Achenia linear-oblong (obscurely angled when young), terete or slightly obcompressed, a little incurved and tuberculate on the back when mature, not rostrate, the abrupt summit crowned with 2 dentiform retrorsely pectinate-ciliate (persistent?) awns.—Annual and perennial dichotomous or brachiate glabrous herbs, with slender branches naked at the summit, and terminated by rather small heads. Leaves opposite, somewhat fleshy (the lower petioled, the upper nearly sessile), 1–2-pinnately parted; the divisions or lobes linear-filiform, canaliculate, entire. Rays light yellow; the disk-flowers purple: the chaff white.

1. *C. filifolium* (Torr. & Gray! l. c.): lower leaves twice ternately or pinnately divided; the upper simply 3–5-divided, or the uppermost simple; the divisions attenuate-filiform; scales of the interior involucre with broad scarious margins, united nearly to the middle, longer than the linear-subulate exterior scales; rays obovate, 3-toothed; achenia crowned with 2 triangular-subulate concave at length divaricate short awns or teeth.—*Nutt.! l. c.* Coreopsis filifolia, *Hook.! bot. mag. t.* 3505; *DC.! prodr.* 7. *p.* 290.

Plains of Arkansas, on the Red River, &c., *Nuttall! Dr. Leavenworth! Dr. Engelmann!* Texas, *Drummond!* May–July.—① *Hook.* ♃ *Nutt.* Stem 1–3 feet high, much branched. Heads nearly as large as in Coreopsis tinctoria. Achenia about 3 lines long, crustaceous when ripe, one or both sides smooth and even when young: the awns or teeth scarcely a line in length, fringed with yellow reflexed bristly hairs, apparently persistent. Chaff closely investing the back of the achenia.—We had provisionally appended this group to Cosmos (not to Coreopsis, as Mr. Nuttall by some misapprehension states), to which it is most allied, notwithstanding the yellow rays (which are also found in C. sulphureus) and erostrate achenia.

2. *C. gracile* (Torr. & Gray! l. c.): leaves pinnately or pedately about 5-parted, with narrowly linear rigid lobes; the uppermost nearly simple;

scales of the inner involucre united above the middle, obtuse, without scarious margins, the exterior ovate, obtuse, very short; rays none; ovaries oblong-linear, crowned with 2 subulate retrorsely pectinate-hispid (deciduous?) awns.—Bidens gracilis, *Torr.! in ann. lyc. New York*, 2. *p.* 215.

Upper Arkansas, on the Canadian River, *Dr. James !*—♃ Stems 2 feet high, branched from the base, dichotomous and naked at the summit, striate. Chaff &c. as in the preceding. Awns stout, concave, about the length of the tube of the corolla.—The single specimen brought by Dr. James, the only one extant, is not very perfect. Perhaps it sometimes bears ray-flowers.

Tourn.

104. BIDENS. *Linn.; Gærtn. fr. t.* 167*; DC. prodr.* 5. *p.* 593.

Heads many-flowered; the ray-flowers (3–8) neutral, often inconspicuous or wanting; those of the disk tubular, perfect. Involucre double; the scales dissimilar or nearly similar, the exterior frequently large and foliaceous. Receptacle flattish; the chaff deciduous with the fruit. Corolla with a slender tube, and an infundibuliform-campanulate 5-toothed limb. Branches of the style hairy at the summit, terminated by an acute or subulate cone. Achenia obcompressed, or slender and more or less 4-sided, often attenuate or rostrate at the summit, crowned with 2–4 (rarely 5–6) rigid and persistent retrorsely barbed or hispid awns.—Annual or sometimes perennial (mostly American) herbs; with opposite, incised, serrate, or divided leaves, feather-veined (the numerous primary veins often running to the sinuses) and reticulated. Flowers mostly yellow or yellowish: the anthers pale or brownish.

§ 1. *Achenia flat, oval or cuneiform, not attenuated at the summit; the margins usually ciliate or hispid mostly in a downward direction.*—PLATYCARPÆA, *DC.*

1. *B. frondosa* (Linn.): glabrous or slightly hairy; lower leaves pinnately 5-, the upper commonly 3-divided; the divisions distinct and mostly petiolulate, lanceolate, or the terminal one ovate-lanceolate, acuminate, coarsely serrate (rarely 3-lobed or parted); heads discoid, pedicellate; scales of the exterior foliaceous involucre longer than the head, mostly acute, conspicuously ciliate towards the base; achenia obovate-cuneiform, 2-awned, pubescent and ciliate with chiefly erect hairs.—*Linn.! spec.* (*ed.* 2) 2. *p.* 1166; *Michx.! fl.* 2. *p.* 136; *Willd.! spec.* 3. *p.* 1718; *Pursh, l. c.; Ell. sk.* 2. *p.* 431; *Hook. fl. Bor.-Am.* 1. *p.* 314; *Bigel. fl. Bost. ed.* 2. *p.* 294; *Darlingt.! fl. Cest. p.* 486; *DC.! l. c.*

Moist fertile soil, throughout Canada! and the United States! abounding around barn-yards and moist corn-fields, where it is a very troublesome weed. July–Sept.—Stem 2–6 feet high, branched. Petioles, and often the lower surface of the leaves, a little hairy. Scales of the outer involucre 8–12, varying from twice to six times the length of the disk; the inner ovate-lanceolate, brownish. Flowers greenish-yellow. Margins of the achenia upwardly ciliate, except near the summit, where the bristles are usually retrorse.—*Stick-tight. Burr-Marigold.*

2. *B. connata* (Muhl.): glabrous; leaves lanceolate or oblong-lanceolate, acute or acuminate, sharply serrate, tapering into margined petioles, slightly connate at the base; the lower ones often ternately divided; the lateral seg-

ments connate at the base and decurrent on the petiole; heads discoid, mostly on short pedicels; scales of the exterior foliaceous involucre longer than the head, lanceolate or oblanceolate, mostly obtuse, scarcely if at all ciliate; achenia narrowly cuneiform, glabrous, with retrorsely ciliate-hispid margins, 2–4-(commonly 3-) awned.—*Muhl. in Willd.! spec.* 3. *p.* 1718 (*& herb.!*); *Pursh, l. c.; Ell. sk.* 2. *p.* 430; *Hook.! l. c.; DC.! prodr.* 5. *p.* 594. B. cernua, *Darlingt.! fl. Cest. ed.* 1. *p.* 92. B. tripartita, *Bigel. fl. Bost. ed.* 2. *p.* 294. B. petiolata, *Nutt.! in jour. acad. Philad.* 7. *p.* 99; *Darlingt.! fl. Cest. ed.* 2. *p.* 486.

Swampy grounds, and margins of ponds, Canada and throughout the Northern States! to Ohio! Kentucky! Missouri! and the western part of Georgia. July–Sept.—① Stem 10–24 inches high, branched. Leaves very smooth, thin and membranaceous when young, mostly conspicuously acuminate at each end, frequently all undivided. Exterior involucre variable in size, sometimes 1–1½ inch long; the inner membranaceous, brown with a yellowish scarious margin. Flowers greenish-yellow; the rays generally, if not always wanting.—De Candolle has mistaken Hooker's meaning, who, in stating that the leaves are sometimes ternate, does not mean ternately verticillate. This species is introduced into Dr. Short's Catalogue of Kentucky plants under the name of Bidens comosa, *Hooker*, but we are not aware that Sir Wm. Hooker, or any other author, has published a species with this name. In the account of Drummond's Collections in the United States, however, a 'Bidens comata, *Linn.*' is enumerated; but as Linnæus has no such species, we suppose B. connata, *Muhl.* to be intended.

3. *B. cernua* (Linn.): glabrous, or often hairy towards the summit; leaves undivided, lanceolate, unequally serrate, the upper ones slightly connate; heads (discoid or radiate) nodding; exterior involucre longer than the head; achenia obovate-cuneiform, 4-awned, the margin retrorsely ciliate-hispid.—*Linn.! spec.* 2. *p.* 832 (var. discoidea); *Engl. bot. t.* 1114; *Schkuhr, handb. t.* 235; *Koch, fl. Germ. & Helv. p.* 356; *Hook. fl. Bor.-Am.* 1. *p.* 314; *DC.! prodr.* 5. *p.* 595. B. minima, *Linn. spec.* (*ed.* 2) 2. *p.* 1165; *Fl. Dan. t.* 312. Coreopsis Bidens, *Linn. spec.* 2. *p.* 908. (var. radiata.)

β. elata: upper part of the (stout) stem and branches somewhat hirsute with short white hairs; leaves oblong-lanceolate, unequally and incisely serrate; rays inconspicuous.—B. chrysanthemoides, *Hook.! fl. Bor.-Am.* 1. *p.* 314 (excl. syn.), *& bot. Beechey, p.* 148? B. quadriaristata, *β.* dentata, *Nutt. in trans. Amer. phil. soc. l. c. p.* 368.

Swamps and ditches, Canada and Saskatchawan, *Hooker*, to Pennsylvania, *Pursh.* Maine and Massachusetts, *Mr. Oakes!* Western part of the State of New York, *Dr. Sartwell! β.* Oregon at Fort Vancouver, and Straits of Da Fuca, *Douglas, Dr. Scouler! Nuttall.* (California, *Beechey?*) —① This species is said to be common in Canada, but in the United States it is probably only to be found along the northern borders. The following species approaches its radiate forms too closely; but in B. cernua, the leaves are more irregularly serrate, scarcely connate, and the outer involucre nearly similar to the leaves, and much longer than the rays when these are present. The Oregon plant is certainly much nearer this than the following species.

4. *B. chrysanthemoides* (Michx.): glabrous; stem erect or reclined at the base; leaves lanceolate, tapering to each end, more or less connate, regularly and rather remotely serrate; heads conspicuously radiate, erect or nodding; scales of the foliaceous exterior involucre somewhat unequal, obtuse, ciliate-serrulate towards the base, mostly shorter than the rays; the interior oblong-ovate, membranaceous, partly colored; achenia cuneiform, with retrorsely aculeolate-ciliate margins; awns 2, 3, or 4.—*Michx.! fl.* 2. *p.* 136; *Willd.! spec.* 3. *p.* 1717; *Pursh! fl.* 2. *p.* 566. Coreopsis Bidens,

Walt. Car. p. 215. C. perfoliata, *Walt. l. c.?* Helianthus lævis, *Linn.! spec.* 2. *p.* 906 (*pl. Gronov.!*), not of *ed.* 2.

α. achenia 2-awned, sometimes with two other rudimentary awns; rays about twice the length of the inner involucre.—B. chrysanthemoides, *Michx.! l. c.* (wholly?); *Ell. sk.* 2. *p.* 430; *DC.! prodr.* 5. *p.* 595.

β. achenia 2-awned; rays 2–3 times the length of the inner (colored) involucre; exterior involucre not ciliate; leaves remotely serrulate, scarcely acute.

γ. achenia 3–4-awned; rays 2–4 times the length of the inner involucre. —B. chrysanthemoides, *Bigel.! fl. Bost. ed.* 2. *p.* 294; *Darlingt.! fl. Cest. p.* 485. B. quadriaristata, *DC.! l. c.*

δ. achenia 4-awned; rays scarcely longer than the inner involucre, often exceeded by the exterior.

Swamps, and margin of shallow pools, Canada! and nearly throughout the United States! (*β.* Western Louisiana, *Dr. Hale!*) Aug.–Nov.—①? Stem 6–30 inches high, branching, rarely a little scabrous or hairy at the summit. Leaves 3–6 inches long, serrate with even acute or mucronulate teeth, often minutely ciliate-scabrous towards the base. Rays golden yellow, usually large (about an inch long) and very showy. Chaff spatulate-linear, scarious, about 3-nerved, colored (yellow or purplish) at the summit.—*Beggar-Ticks.*—The number of awns seems to be constant in each individual, but certainly does not furnish specific distinctions. A specimen sent by the elder Richard to Willdenow (probably collected by Michaux), presents 4-awned achenia. Our var. *δ.* is a mere state of var. *γ.*, and nearly approaches B. cernua.

5. *B. Beckii* (Torr.): glabrous; stem elongated, simple or sparingly branched; leaves chiefly submersed, sessile, many times dissected into capillary segments; the emersed ones few, lanceolate, slightly connate, sharply serrate or incised; heads solitary on short terminal peduncles; scales of the exterior involucre usually 5, oval or oblong, obtuse, shorter than the interior and somewhat resembling them, several times shorter than the oblong rays; achenia (immature) narrowly oblong, flattened, perfectly glabrous, 4- (sometimes 6-) awned; the awns approximate in pairs, densely hispid above, glabrous near the base.—*Torr.! in Spreng. neu. entd.* 2. *p.* 135, *& syst.* 3. *p.* 455; *Beck.! bot. p.* 207; *DC.! prodr.* 5. *p.* 595.

In lakes and ponds, and slow-flowing streams, near Schenectady! and in several localities throughout the western part of the State of New York! Massachusetts and Vermont, *Mr. Oakes!* Near Montreal, *Mr. Goldie.* Aug.–Sept.—Plant with the habit and submersed foliage of Ranunculus aquatilis, except that the leaves are opposite; the lowest emersed leaves often 1–2-pinnatifid. Scales of the inner involucre oblong-lanceolate, yellowish, with brown stripes. Rays golden yellow, 8–10 lines long. Anthers pale. Branches of the style terminated by a densely hairy rather acutely conical appendage. Awns usually unequal; the longer nearly twice the length of the half-grown achenium.

§ 2. *Achenia linear-tetragonal, attenuate or rostrate, glabrous or upwardly hairy.*—PSILOCARPÆA, DC. (Kerneria, *Mœnch.*)

6. *B. leucantha* (Willd.): stem glabrous, somewhat 4-angled; leaves nearly glabrous, petioled, pinnately 3–5-, the upper ones 3-divided; the divisions ovate or ovate-lanceolate, acute, sharply and closely serrate, sometimes confluent; heads (small) paniculate-corymbose, pedicellate; scales of the involucre nearly equal, united at the base; the exterior narrower and ciliate, obtuse; the interior lanceolate, acute, somewhat scarious and colored, rather shorter than the disk; rays small, white; achenia somewhat quadrangular,

linear, glabrous or slightly hairy, 2–4-awned.—*Willd. spec.* 3. *p.* 1719; *DC. prodr.* 5. *p.* 598. Coreopsis leucantha, *Linn. spec.* (*ed.* 2) 2. *p.* 1282. C. coronata, *Linn. l. c.*, excl. *hab.*

Tampa Bay, Florida, *Dr. Leavenworth!* Key West, *Mr. Blodgett!*—① A native also of Mexico, the West Indies, &c.

7. *B. Californica* (DC.): stem 4-angled, somewhat pubescent at the summit; leaves slightly hairy, petioled; the lower pinnately 5-, the upper 3-divided or parted; the divisions ovate, acute or acuminate, incisely serrate; heads discoid, or with a few small rays, pedicellate, somewhat paniculate; scales of the involucre nearly equal, lanceolate; the exterior ciliate, spreading, all at length reflexed; achenia linear, slender, 4-angled, minutely and sparsely hairy towards the summit, 3–4-awned.—*DC.! prodr.* 5. *p.* 599; *Nutt. in trans. Amer. phil. soc. l. c.*

California, *Douglas! Nuttall.*—① Plant ascending, scarcely a foot high. Heads small. Achenia about 4 lines long, sometimes minutely tuberculate-scabrous. Rays white, or yellowish according to Nuttall; who states that the plant is also a native of Chili.

8. *B. bipinnata* (Linn.): glabrous; stem quadrangular, striate; leaves petioled, 1–3-pinnately parted; the segments lanceolate or oblong-ovate, mucronulate, usually narrowed at the base; heads (small) on naked slender pedicels, with 3–4 inconspicuous rays scarcely longer than the disk; exterior scales of the involucre linear, spreading, about the length of the narrowly lanceolate interior ones; achenia linear, elongated and slender, 4-angled and grooved, nearly glabrous, 3–4-awned.—*Linn.! spec.* 2. *p.* 832; *Michx.! fl.* 2. *p.* 135; *Willd.! l. c.*; *Ell. sk.* 2. *p.* 432; *Darlingt.! fl. Cest. p.* 487; *DC.! prodr.* 5. *p.* 603.

Dry soil, and in waste places, Connecticut! New York! and Pennsylvania! to Arkansas! and Florida! (Key West, *Mr. Blodgett!*) July–Oct. —① Stem 1–4 feet high, slender, branched. Rays yellow, obovate: disk-flowers yellow, about 20. Achenia three-fourths of an inch in length.—*Spanish Needles.*

B. pilosa (Linn.) is not a native of North America, nor is it said to be by Linnæus, except originally in the *Hortus Cliffortianus;* where the vars. β. & γ. are said to come from Virginia, &c. But all the synonyms of β. there enumerated (except *Dill. Elth. t.* 43, *f.* 5–10, which belong to a broad-fruited species) are in the *Species Plantarum* justly referred to B. bipinnata; and those of var. γ., which we have not the means of tracing further, are equally rejected from the species. B. pilosa is again given as a North American plant by Willdenow, and afterwards by Pursh, who terms it a common weed in old fields and cultivated grounds, from Pennsylvania to Carolina; but the plant in Pursh's view (and also Elliott's ?) is doubtless B. frondosa.

Div. 5. VERBESINEÆ, *Less.*, *DC.*—Rays pistillate and fertile, ligulate, rarely none. Achenia compressed or obcompressed, the exterior integument thin. Pappus awned from the angles of the achenium, sometimes with intermediate chaffy scales or teeth, frequently wanting.

105. LEPTOSYNE. *DC. prodr.* 5. *p.* 531.

Head many-flowered; the ray-flowers 10–15, broadly ligulate; those of the disk tubular, perfect. Involucre double, each series of 6–8 scales, as long as the disk; the exterior linear, foliaceous, loose; the interior elliptical, somewhat membranaceous. Receptacle convex; the chaff membranaceous, 3-nerved, deciduous with the fruit. Rays oblong, coarsely 3-toothed, the base abruptly narrowed into a short slender tube, which is sparsely barbellate at the summit. Corolla of the disk with a slender tube, which is furnished with a bearded ring at the summit, and an obconical throat, deeply 5-toothed. Anthers pale. Branches of the style in the ray-flowers scarcely exserted, obtuse; in the disk somewhat capitellate at the apex, and terminated by a very short and abrupt pointed cone. Achenia oval, obcompressed, slightly incurved when mature, sparsely scabrous with short capitate gland-like hairs, surrounded by a narrow, at length somewhat fungous-thickened wing-like margin, 1-nerved on the inside, crowned with a minute and entire coroniform or cup-shaped pappus.—An annual (biennial, *Nutt.*) glabrous very slender herb, branching from the base; the scapes or peduncles (8–12 inches long) naked, bearing a single head. Leaves alternate, nearly all at the base of the stem, linear-filiform, entire, or sparingly pinnately parted. Ray and disk yellow.

L. Douglasii (DC.! l. c.)—*Hook. & Arn.! bot. Beechey, suppl. p.* 352.
L. Californica, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 363.

California, *Douglas!* (in flower only) *Nuttall!* May–June.—Head, including the rays, three-fourths of an inch in diameter.—Instead of having the disk-flowers sterile, as described from immature specimens by De Candolle, and Hooker & Arnott, these alone ripen their fruit according to Nuttall; but we find perfect achenia both in the disk and ray. We place the genus as near as possible to Coreopsis, and next to Chrysanthellum in Verbesineæ.

106. TUCKERMANNIA. *Nutt. in trans. Amer. phil. soc. l. c.*

Head many-flowered; the ray-flowers 15–20, ligulate; those of the disk tubular, perfect. Involucre double; the scales ovate or oval, all slightly united at the base; the exterior 6–8, shorter than the disk, herbaceous; the interior 8–10, membranaceous, somewhat colored (yellowish). Receptacle flat; the chaff membranaceous and scarious, minutely nerved, linear-lanceolate, flat, apparently deciduous. Corolla of the disk with a slender tube, which at the summit is furnished with a naked or obscurely barbellate ring (as in Leptosyne, except that the jointed hairs are few and short or nearly wanting); the throat narrowly obconical, 5-toothed. Branches of the style in the disk-flowers slender, somewhat capitellate at the apex, and terminated by an obscure or extremely short cone. Achenia elliptical, obcompressed, smooth, surrounded by a narrow wing or margin, entirely destitute of pappus.—A somewhat succulent perennial glabrous herb; the alternate or scattered bipinnately-divided leaves with linear entire segments, nearly all borne towards the base of the stem; which terminates in a naked peduncle (a foot long), bearing a very showy head, more than two inches (or even 3–4 inches, ex *Nutt.*) in diameter. Flowers golden yellow.

T. maritima (Nutt.! l. c.)

St. Diego, California, on shelving rocks near the sea, *Nuttall!* May.—

"After the period of flowering, it remains for a month or two in a dormant state, shedding its leaves. . . . Cultivated in Philadelphia, it flowered both in the spring and autumn." *Nutt.*—We trust the plant will not be lost to our gardens, as it is very showy. It is very closely allied to Leptosyne, and, like that plant, has nearly the style of the Anthemideæ.

107. SPILANTHES. *Jacq. stirp. Amer. p.* 214, *t.* 126; *DC. l. c.*

Spilanthus, *Linn. mant.; Gærtn.; Less. &c.*—Spilanthes & Acmella, *Richard.*

Heads many-flowered; the ray-flowers ligulate, sometimes inconspicuous, or frequently wanting. Involucre shorter than the disk, appressed, in 2 series; the exterior scales somewhat foliaceous; the interior membranaceous. Receptacle conical, convex, or elongated; the chaff membranaceous, embracing the flowers. Corolla of the disk tubular-infundibuliform, 4–5-toothed. Branches of the style in the disk-flowers truncate and penicillate at the summit. Achenia of the disk laterally compressed, the margins mostly ciliate; of the ray, when present, somewhat triquetrous, or by the obliteration of the inner angle more or less obcompressed; all either crowned with 1–3 small setiform awns, or naked.—Mostly annual tropical herbs (the greater portion American), usually fervid or acrid to the taste; with opposite entire or serrate leaves. Heads solitary on slender peduncles, ovate or conical. Flowers yellow or rarely white. Anthers blackish.

§ *Heads radiate; the rays hairy at the base: achenia of the ray either 3-angled and 3-awned or sometimes awnless, or 2-awned, the inner angle naked, or sometimes the inner angle obliterated.*—ACMELLA, (Rich.) DC.

1. *S. repens* (Michx.): glabrous, or sparsely somewhat hairy; stem simple or slightly branched, decumbent, rooting at the base; leaves lanceolate or ovate-lanceolate, acute, somewhat serrate, mostly tapering into a petiole; peduncles terminal (or at length alar), elongated; heads ovoid; scales of the involucre lanceolate, about 12, in 2 series; rays 12, exserted; achenia awnless and without ciliate margins.—*Michx.! fl.* 2. *p.* 131; *DC. prodr.* 5. *p.* 623. Acmella repens, *Pers.; Ell. sk.* 2. *p.* 406. Anthemis repens, *Walt.; Pursh, fl.* 2. *p.* 562.

In wet or inundated places, South Carolina to Florida! Sept.–Oct.—♃ Disk and ray yellow; the former at length oblong-conical. Achenia slightly papillose-scabrous when mature; the exterior often with ciliate margins. —We have a specimen from a plant cultivated in the *Jardin des Plantes* under this name, which accords with the description as to the foliage; but the short involucral scales are ovate, and the achenia all strongly ciliate.

2. *S. Nuttallii:* villous-pubescent, or nearly glabrous; stems diffusely branched, ascending; leaves ovate or oblong, acute, coarsely serrate-toothed, abruptly contracted into a slender petiole; heads ovoid, at length conoid-oblong, on terminal or alar peduncles longer than the leaves; scales of the involucre lanceolate-ovate, acute, 9–12, somewhat in a double series; rays 5?–12, mostly as long as the disk; achenia awnless (rarely with 1 or 2 very minute awns), tuberculate-scabrous when mature, the margins ciliate.— Acmella occidentalis? *Nutt.! gen.* 2. *p.* 171, not of *Pers.*

Inundated places, East Florida! (*Dr. Leavenworth!*) to Louisiana! Missippi! Arkansas! and Texas! Aug.–Oct.—Stems 1–2 feet long. Leaves 2 inches or more in length, one or more wide, veiny. Rays yellow, varying from a fourth to fully half an inch in length, usually 10 or 12. Disk when mature fully half an inch long. Achenia of the ray somewhat triangular-obcompressed, otherwise similar to those of the disk; the innermost often smooth, at least when young; but all distinctly, although not very stongly ciliate.

S. Pseudo-Acmella (Linn.) is cited as a Californian species, with a mark of doubt, in the Botany of Beechey's Voyage (p. 150), on the authority of a very imperfect specimen in the collection from California, made during that voyage.

108. LIPOCHÆTA. *DC. prodr.* 5. *p.* 610.

Heads many-flowered; the ray-flowers ligulate, in a single series. Involucre ovate or campanulate; the scales oval, appressed, in 2–3 series. Receptacle flattish; the chaff membranaceous, clasping the flowers. Branches of the style in the disk-flowers appendiculate at the summit. Achenia of the ray 3-sided, scarcely or somewhat winged, each angle produced into a persistent awn, and with a few setiform [or chaffy] teeth between the awns; of the disk compressed, 1–2-awned, the inner margin slightly winged.—Suffruticose or herbaceous plants [chiefly natives of Mexico and the Sandwich Islands], with the habit of the opposite-leaved Verbesinæ. Leaves opposite, sessile, or on short petioles, ovate-lanceolate, somewhat serrate, triplinerved. Heads pedicellate, either solitary or corymbose. Flowers yellow. *DC.*

§ *Achenia of the ray 3-, of the disk mostly 2-awned (the awns slender and upwardly scabrous), with a few intermediate chaffy teeth or scales, more or less united with each other and with the base of the awns.*—CATOMENIA.

1. *L. Texana:* suffruticose; branches terete; leaves sessile, triplinerved, rhombic-ovate, the uppermost ovate-lanceolate, rather acute, strigose above, villous-hirsute beneath, sparingly and remotely serrate, mostly 2-angled or 2-lobed near the middle, cuneiform at the base; peduncles solitary, naked, slender; scales of the canescent campanulate involucre in 2 series, nearly equal in length; the exterior lanceolate, somewhat foliaceous; the interior with scarious margins; ovaries narrow, crowned with 2–3 setiform awns, and a few short hyaline denticulate-lacerate scales, all more or less united at the base.

Texas, *Dr. Riddell!*—Plant hairy and scabrous; the young branches, lower surface of the leaves, peduncles, &c. somewhat canescent with appressed hairs. Leaves 1–2 inches long, slightly hastate-lobed or angled; the scabrous hairs of the upper surface arising from impressed tubercles. Involucre about the length of the disk, appressed. Rays 7 or 8, narrowly oblong, minutely 3-toothed at the summit, 5–6 lines long, orange-yellow in the dried state. Corolla of the disk yellow, with a slender tube, and an elongated slightly dilated 5-toothed limb; the teeth puberulent externally. Anthers brownish, tipped with yellowish triangular appendages. Branches of the style (in the disk) terminated with long and acute linear-subulate hirsute appendages. Ovaries of the ray triangular, somewhat pubescent; of the disk pubescent, oblong-linear, compressed; the awns in the latter 2, sometimes 1 or 3, rather shorter than the corolla; in the former 3, often unequal, shorter than those of the disk. Mature achenia unknown.—Apparently allied to L. strigosa, *DC.*

109. VERBESINA. *Linn.* (partly); *Less. syn. p.* 231; *DC. prodr.*

Species of Verbesina & Siegesbeckia, *Linn.*

Heads several-many-flowered; the ray-flowers ligulate, usually few, rarely wanting. Scales of the involucre erect, imbricated in two or more often unequal series. Receptacle flat or rather convex; the chaff concave or embracing the flowers. Corolla of the disk with a short tube, and a cylindraceous 5-toothed limb. Branches of the style with an acute appendage. Achenia nearly flat (compressed laterally) winged or wingless, 2-awned.—Perennial or suffrutescent (American) plants; the serrate or lobed leaves often decurrent on the stem. Heads solitary or corymbose. Flowers white or yellow. Anthers blackish.

§ *Heads radiate; the rays in a single series: achenia usually with* 2 *similar and equal awns.*—VERBESINARIA, DC.

* *Leaves opposite: flowers of the disk and ray yellow.*

1. *V. Siegesbeckia* (Michx.): stem 4-winged; leaves ovate or ovate-lanceolate, sharply serrate, acuminate at both ends, triplinerved; heads in trichotomous somewhat cymose corymbs; scales of the involucre few (8–10) and obtuse, in 2 series; rays 1–5, lanceolate; achenia obovate-oblong, wingless, hairy, 2-awned; those of the ray rarely 1-awned or awnless.—*Michx.! fl.* 2. *p.* 134; *Willd. spec.* 3. *p.* 2224; *Pursh, fl.* 2. *p.* 565; *Ell. sk.* 2. *p.* 412. V. Phæthusa & Siegesbeckia, *DC. prodr.* 5. *p.* 616? V. occidentalis, *Walt. Car. p.* 213. V. foliis ovatis petiolatis, &c., *Gronov.! fl. Virg. ed.* 1. *p.* 179. Siegesbeckia occidentalis, *Linn.! spec.* 2. *p.* 901, *& ed.* 2. *p.* 1269. Chrysanthemum Americanum caule alato, &c., *Pluk. mant. t.* 342. Phæthusa Americana, *Gærtn. fr.* 2. *p.* 425, *t.* 169, *f.* 3? P. borealis, *Spreng. syst.* 3. *p.* 591? Coreopsis alata, *Pursh, fl.* 2. *p.* 567; and therefore Actinomeris alata, *Nutt. gen.* 2. *p.* 181.

Dry woods and road-sides, very common in the Southern and Western States! Aug.–Sept.—Stem 4–6 feet high. Leaves large, membranaceous, often pubescent, especially beneath, abruptly tapering into a margined petiole. Rays 8–10 lines long; those of the disk about 20 in number: the tube of the corolla in both pubescent. Chaff lanceolate, acute, nearly as long as the disk. Awns of the achenia slender, often divergent or recurved when old.—The plant we have described is certainly the Siegesbeckia occidentalis of Linnæus and Gronovius, and is the only North American species with opposite leaves that we have seen: the leaves appear to be always triplinerved; but the uppermost often indistinctly so. We are doubtful whether it be the Phæthusa of Gærtner, which seems however to differ only in wanting the awns: these are sometimes absent in the ray of our plant, and the short bristly hairs of the achenium, some of which crown the summit, accord very well with Gærtner,s and De Candolle's description, although they have nothing to do with the pappus. The plant, according to De Candolle, is somewhat diœcious in cultivation.

* * *Leaves alternate: flowers of the disk and ray white.*

2. *V. Virginica* (Linn.): stem narrowly or interruptedly winged, tomentose-pubescent at the summit; leaves lanceolate or ovate-lanceolate, serrate (often obscurely), feather-veined, scabrous above, pubescent or tomentose beneath, acute or acuminate at each end, the lower ones decurrent; heads in compound cymose corymbs, crowded; rays 3–4, oval; achenia minutely hairy, narrowly and often unequally winged, crowned with 2 scabrous setiform awns.—*Linn.! spec.* 2. *p.* 901 (*pl. Gronov.!*); *Walt.! Car. p.* 213; *Michx.! fl.* 2. *p.* 134; *Pursh, l. c.; Ell. sk.* 2. *p.* 410; *DC.! l. c.* V. paniculata, *Poir. dict.* 8. *p.* 456.

β. stem and lower surface of the leaves more tomentose; achenia sometimes wingless.—V. villosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 370.

Woods and dry soil, Pennsylvania (*Michaux*) and Virginia! to Florida! and Louisiana! β. Kentucky! to Arkansas! and Louisiana! Aug.–Sept. —Stem 3–6 feet high. Involucre very pubescent. Rays very short: the tube hairy, as also the (about 15) disk-flowers.—The wings of the achenia are variable, even in the same individual, as in Actinomeris; and are sometimes nearly absent in the smoothish as well as the most tomentose forms.

3. *V. sinuata* (Ell.): stem striate, pubescent, naked, or sometimes winged near the base; leaves irregularly sinuate-lobed or laciniate-pinnatifid, scabrous above, tomentose-pubescent beneath, the lower ones tapering into a long and narrow base or winged petiole; the lobes denticulate or serrate; heads in a compound corymb; rays 3–5, oval; achenia minutely hairy, 2-awned, narrowly winged.—*Ell.! sk.* 2. *p.* 411; *DC. prodr.* 5. *p.* 615. V. laciniata, *Nutt.! gen.* 2. *p.* 170. Siegesbeckia laciniata, *Poir. dict.* 7. *p.* 158?

Sandy soil, from the sea-coast of S. Carolina! to Florida, *Dr. Burrows! Dr. Leavenworth!* Sept.–Nov.—Stem 4–6 feet high. Leaves mostly acute or acuminate, variously sinuate-pinnatifid; the uppermost and lowest frequently spatulate-ovate and undivided, according to Elliott. Heads, flowers &c., nearly as in V. Virginica; of which perhaps it is only a variety.

V. laciniata (Walt.), is said to have 3–9 yellow 2–3-toothed *sterile* rays, 3-awned achenia, and sinuate-laciniate leaves.

110. XIMENESIA. *Cav. ic.* 2. *p.* 60, *t.* 178; *DC. prodr.* 5. *p.* 627.

Heads many-flowered; the ray-flowers ligulate, in a single series. Scales of the involucre somewhat in 2 series, narrow, acute, foliaceous, spreading. Receptacle convex; the chaff lanceolate, membranaceous, embracing the flowers. Tube of the corolla hispid. Branches of the style in the disk-flowers appendiculate. Achenia of the disk flat (compressed laterally), winged, somewhat hairy, deeply emarginate at the summit, with 2 setiform awns more or less united with the wing; those of the ray mostly dissimilar and wingless.—Annual (chiefly Mexican) somewhat canescent herbs. Leaves opposite or alternate, mostly tapering into a winged petiole, which is dilated and auriculate at the base, cordate-ovate or oblong, serrate-toothed. Heads solitary, or loosely and irregularly corymbose. Flowers yellow.

1. *X. encelioides* (Cav. l. c.): achenia of the disk slightly villous, surrounded with the wing, emarginate at the summit; of the deeply 3-toothed

rays rugose, wingless. *DC.! prodr. l. c.* Pallasia serratifolia, *Smith, in Rees, cycl.*

Florida, *Dr. Chapman! Mr. Croom!* Probably introduced.

111. SANVITALIA. *Gualt. in Lam. jour. hist. nat.* 2. *p.* 176, *t.* 33, *& ill. t.* 686; *Cav. ic.* 4. *t.* 351; *DC. prodr.* 5. *p.* 628.

Heads many-flowered; the ray-flowers ligulate, in a single series, the ligules persistent. Scales of the involucre somewhat imbricated in 2–3 series, appressed; the innermost rather longer and equalling the disk. Receptacle conical or convex, chaffy; the chaff oblong, partly clasping the flowers. "Corolla of the disk articulated above the ovary, piliferous," *DC.* Branches of the style terminated by a short cone. Achenia of the ray, larger, 3-sided, smooth, crowned with 3 diverging smooth conical awns; of the disk compressed; the exterior ones muricate or roughened and nearly awnless; the interior more or less winged and ciliate, crowned with 2 minute awns.—Annual (chiefly Mexican) dichotomous or trichotomous mostly hairy herbs. Leaves opposite, ovate, triplinerved, usually entire, tapering into a ciliate or hairy petiole. Heads solitary and terminal, sessile between the uppermost pair of leaves. Rays yellow: the disk purplish.

1. *S. ocymoides* (DC.): stem diffuse, rather erect; leaves ovate; awns of the ray longer than the ligules; achenia of the disk compressed-tetragonal; the exterior muricate, wingless, slightly 2-awned; the interior smoother, somewhat winged, with rather longer awns. *DC.! l. c.*

Texas, *Berlandier!*—Leaves, including the ciliate petioles, about an inch long, strigose. Plant with wholly the habit of S. procumbens.

The plant before me must be S. procumbens.

Subtribe 3. **Flaverieæ**, *Less.*—Heads 1–few-flowered, densely aggregated, heterogamous with a single pistillate ray-flower, the others perfect; or sometimes homogamous (rarely with the pistillate flowers in several series, when the innermost are perfect but sterile). Branches of the style usually not appendiculate. Receptacle naked, except when the head is many-flowered. Achenia wingless, somewhat terete, attenuate at the base. Pappus none.—Herbs, with opposite triplinerved or nervose leaves. Flowers yellow.

112. FLAVERIA. *Juss. gen. p.* 168; *DC. prodr.* 5. *p.* 635.

Heads in glomerate fascicles, few-flowered, either discoid, the flowers all tubular and perfect, or with a single pistillate ray-flower. Involucre oblong, of 3–4 connivent nearly equal scales, the outermost broader and somewhat concave. Receptacle small, naked. Achenia oblong or subclavate, striate, glabrous, naked.—Annual or rarely perennial (tropical and South American) herbs; with opposite mostly sessile leaves, toothed or entire. Corolla pale yellow.

1. ***F. linearis*** **(Lagasca)**: suffruticose at the base, somewhat procumbent,

glabrous or slightly pubescent; leaves sessile, connate, narrowly linear, entire, nearly nerveless, somewhat fleshy; heads in compound crowded corymbs; ray single or often wanting.—*Lag. nov. gen. &c. p.* 33; *DC. l. c.* F. maritima, *H. B. & K.! nov. gen. & spec.* 4. *p.* 285. F. tenuifolia, *Nutt.! in jour. acad. Philad.* 7. *p.* 81. Selloa nudata, *Nutt.! in Sill. jour.* 5. *p.* 300; and therefore Gymnosperma nudatum, *DC. prodr.* 5. *p.* 312.

East Florida, *Mr. Ware! Mr. Peale!* Key West, *Mr. Bennett! Mr. Blodgett!*—A maritime species, also a native of Cuba. 15. D. G.!

Subtribe 4. TAGETINEÆ, *Cass.*—Heads many-flowered, either heterogamous, with the ray-flowers pistillate and mostly ligulate, or homogamous and discoid. Involucre either in a single series, the scales more or less united; or in several series, the exterior scales bracteiform and distinct, the inner more or less united. Branches of the style terminated by a cone or a subulate appendage. Receptacle naked, flat. Achenia striate, attenuate at the base. Pappus composed of awns, squamellæ, or bristles.—Herbs, marked with large glandular pellucid dots, and therefore commonly odorous. Leaves opposite or alternate.

113. DYSODIA. "(Dyssodia) *Cav. in ann. sci. nat.* 6. (1802) *p.* 334"; *DC. prodr.* 5. *p.* 639.

Heads radiate or sometimes discoid; the rays ligulate, pistillate. Scales of the proper involucre in a single series and more or less united, usually subtended by an outer series of bracts. Receptacle somewhat alveolate or hirsute-fimbrillate. Corolla of the disk regularly 5-toothed. Branches of the style terminated by a somewhat pubescent cone. Achenia elongated, 4-angled and somewhat compressed. Pappus a single series of chaffy scales, which are pinnately or palmately laciniated or cleft into scabrous bristles, so as to appear like a polyadelphous pappus!—Mostly annual branching (chiefly Mexican) herbs, with the habit of Tagetes. Leaves opposite or alternate, commonly pinnately parted or toothed, the teeth mucronate-setigerous. Heads terminating the paniculate or corymbose branchlets. Flowers yellow or orange.

§ *Receptacle somewhat alveolate, slightly fimbrillate, or naked: involucre bracteolate; the bracts entire or laciniate-pinnatifid.*—BŒBERA, Willd. (1803.) (Dysodia § Bœbera & Bœberoides, *DC.*)

1. *D. tagetoides:* glabrous; stems corymbose at the summit; leaves alternate or rarely opposite, narrowly linear, spinulose-toothed; scales of the cylindrical-oblong involucre united nearly to the summit, longer than the spinulose-toothed or sparingly pinnatifid involucrate bracts; rays numerous (10 or more), exserted; achenia glabrous; pappus much shorter than the corolla; the scales linear-subulate, sparingly laciniate, or sometimes nearly entire.

Texas, *Drummond!* Western Louisiana or Arkansas, *Dr. Leavenworth!* —♃? Stem erect, often branching at the base, about a foot high. Leaves 2 inches long, only a line wide, pinnately laciniate with spinulose teeth. Involucre much longer than the pappus, marked with very large dots. Rays linear-oblong, bright yellow.

2. *D. chrysanthemoides* (Lagasca): puberulent or glabrous, diffusely branched; leaves opposite, pinnately parted; the lobes linear, toothed or incised towards the summit; heads terminating the paniculate leafy branchlets; scales of the campanulate involucre united at the base, scarious at the summit; the involucriform bracts (about 8) linear, entire, ciliate at the base; rays few, scarcely exceeding the involucre; achenia pubescent; pappus as long as the involucre, rather longer than the corolla; the scales dissected into numerous slender bristles.—*Lagasca, elench. hort. Madr. p.* 29; *DC.! prodr.* 5. *p.* 640. Dyssodia glandulosa, *Cav. demonst. bot. p.* 202, not of *Less.* Tagetes papposa, *Vent. hort. Cels. t.* 36; *Michx.! fl.* 2. *p.* 132. Bœbera chrysanthemoides, *Willd.! spec.* 3. *p.* 2125; *Pursh, fl.* 2. *p.* 559. B. glandulosa, *Pers. syn.* 2. *p.* 459.

Banks of rivers, and on prairies, on the Mississippi and Missouri, and their tributaries, from St. Pierre River! and Illinois! to Louisiana! Aug.–Oct. — ① Plant about a foot high, exhaling a very strong unpleasant odor. Flowers golden yellow.—Willdenow gives Carolina and Florida as habitats of this plant, doubtless incorrectly. It is also a Mexican species.

114. RIDDELLIA. *Nutt. in trans. Amer. phil. soc. (n. ser.)* 7. *p.* 371.

Heads many-flowered, radiate; the rays 3–5, ligulate, pistillate, dilated, 6-nerved, equally 3-lobed, persistent; the disk-flowers tubular, perfect. Involucre cylindrical, composed of 8 scales united in a single series. Receptacle small, naked. Corolla of the disk 5-toothed; the teeth glandular. Appendages of the style subcapitate, obtuse, minutely pubescent. Achenia "slender and conic [obconical ?], prismatic, smooth." Pappus of the ray and disk similar, of 5–6 lanceolate acuminate nerveless chaffy scales.—A slender branching aromatic herb, with alternate oblong-linear and somewhat tomentose leaves; the branchlets corymbose, bearing 3–5 heads. Rays apparently yellow, turning to reddish-orange. Involucre densely silky with long hairs.

R. tagetina (Nutt. l. c.)

"In the southern range of the Rocky Mountains, towards the sources of the Platte.—A very elegant plant, with the habit of a Zinnia, but having the involucrum formed of a single series of united sepals. The rays are very remarkable, appearing as rigid as parchment, and remain perfectly flat after inflorescence, as in Zinnia." *Nuttall.*—This genus is dedicated to Prof. John L. Riddell, formerly of Ohio, now of New Orleans; author of a *Synopsis of the Flora of the Western States*, published at Cincinnati in 1835 (pp. 116, 8vo.), and of a *Supplementary Catalogue of Ohio Plants* (1836). This plant is unknown to us, and we have taken the character from Mr. Nuttall's memoir. So far as the description extends, it only differs from Tagetes in the persistent rays, and the pubescence. We are not informed whether or not the leaves present the large pellucid dots of the Tagetineæ.

Subtribe 5. HELENIEÆ, *Cass.*, *DC.*—Heads mostly heterogamous and radiate; the disk-flowers perfect, but sometimes sterile. Receptacle naked or chaffy. Anthers often blackish, the lobes frequently somewhat produced at the base, but scarcely caudate. Pappus chaffy, the scarious scales several or numerous, and distinct, or sometimes none.—Leaves alternate or opposite. (Chiefly American.)

CONSPECTUS OF THE GENERA.

Div. 1. GAILLARDIEÆ.—Receptacle not chaffy, nor deeply favose.

Subdiv. 1. EUGAILLARDIEÆ.—Branches of the style long and filiform, hispid.

115. GAILLARDIA. Rays ligulate, neutral. Achenia obpyramidal, involucrate with villous hairs. Pappus 1-nerved and awned.

116. PALAFOXIA. Rays ligulate, pistillate, or none. Achenia mostly slender. Pappus 1-nerved, awnless.

117. CHÆNACTIS. Rays, or exterior disk-flowers tubulose, inflated or palmate. Achenia slender. Pappus nerveless.

Subdiv. 2. EUHELENIEÆ.—Branches of the style obtuse or truncate.

* *Rays ligulate and fertile, or none.*

+ Receptacle flat or flattish.

118. HYMENOPAPPUS. Rays none. Achenia turbinate, substipitate, many-striate. Scales of the pappus short and obtuse, 12–20. Involucre somewhat petaloid, spreading.

119. BAHIA. Rays 5–11. Achenia prismatic. Scales of the pappus 4–10, oblong. Involucre appressed.

120. ACTINOLEPIS. Rays 3–5. Achenia terete. Pappus of the disk none, in the ray of 10–15 narrow acute scales.

+ + Receptacle conical, convex, or oblong.

121. LASTHENIA. Scales of the involucre united! Pappus of 5–10 scales, or sometimes none!

122. BURRIELIA. Receptacle conical, papillose. Scales of the pappus equal, narrow, subulate-awned, or sometimes none!

123. DICHÆTA. Receptacle conical, alveolate-toothed. Scales of the pappus 4–8 oblong and obtuse, and about 2, which are subulate-awned.

124. HYMENOXYS. Receptacle conical, alveolate. Scales of the pappus 5–12, oblong or lanceolate, acuminate or awned, rarely obtuse or none! Lobes of the disk-corolla nearly glabrous.

125. ACTINELLA. Receptacle hemispherical or conical, naked. Scales of the involucre ovate or lanceolate, appressed. Lobes of the disk-corolla glandular-bearded. Scales of the pappus 5–12, ovate, 1-nerved, awned.

126. AMBLYOLEPIS. Receptacle flattish, alveolate. Scales of the involucre ovate, appressed. Scales of the pappus 5, obtuse, nerveless.

127. HELENIUM. Receptacle convex or oblong, naked. Scales of the involucre linear or subulate, spreading or reflexed. Lobes of the disk-corolla glandular-bearded. Scales of the pappus 5–8, apiculate or awned.

* * *Rays neutral.*

128. LEPTOPODA. Receptacle conical or hemispherical, areolate. Scales of the pappus mostly nerveless and awnless, denticulate or fimbriate.

Div. 2. **BALDWINIEÆ.**—Receptacle very deeply alveolate; the corneous alveoli (united chaff?) enclosing the achenia. Rays neutral.

129. **BALDWINIA.** Rays 20–30. Involucre in about 4 series. Alveoli of the receptacle truncate. Head solitary.

130. **ACTINOSPERMUM.** Rays 8–10. Involucre in about 2 series. Alveoli of the receptacle subulate-toothed. Heads corymbose.

Div. 3. **GALINSOGEÆ.**—Receptacle chaffy; the chaff distinct. Scales of the involucre not enclosing the ray-achenia.

131. **MARSHALLIA.** Rays none: disk-flowers numerous. Chaff narrow, rigid. Scales of the pappus ovate or triangular-lanceolate, entire.

132. **BLEPHARIPAPPUS.** Rays and disk-flowers few. Chaff membranaceous. Scales of the pappus pectinate-plumose.

Div. 4. **MADIEÆ.**—Receptacle wholly or partly chaffy. Ray achenia destitute of pappus, enclosed by the scales of the involucre.

* *Achenia not compressed, but often obcompressed.*

+ Heads many-flowered; the rays infertile?

133. **ACHYRACHÆNA.** Pappus of 10 membranaceous obtuse scales in 2 series, the inner large. Achenia striate, attenuate at the base.

+ + Heads many-flowered; the flowers all (or nearly all) fertile.

134. **LAYIA.** Pappus of 10–20 bristly awns, villous-plumose towards the base.

135. **CALLICHROA.** Pappus of 12–25 subulate serrulate-scabrous awns. Disk-achenia somewhat obcompressed, villous.

136. **OXYURA.** Pappus none. Achenia of the disk and ray glabrous, obovate, obcompressed; the central infertile.

+ + + Heads several–many-flowered; the disk-flowers infertile.

137. **HEMIZONIA.** Rays 5–20. Achenia glabrous; those of the ray obovoid, gibbous, somewhat obcompressed, partly enclosed by the involucral scales. Pappus none, or of lacerate squamellæ.

138. **CALYCADENIA.** Rays 3–5. Achenia mostly hairy; of the ray obovoid-triangular, partly enclosed by the involucral scales; of the disk quadrangular-obcompressed, with a pappus of 5–10 lanceolate or subulate often awned scales.

139. **LAGOPHYLLA.** Rays and disk-flowers each about 5. Achenia glabrous; those of the disk abortive, destitute of pappus; of the ray obcompressed.

* * *Achenia compressed, glabrous. Pappus (except in* Anisocarpus) *none.*

140. **ANISOCARPUS.** Rays about 12: disk-flowers numerous, with abortive ovaries, and a pappus of 5–8 fimbriate-lacerate squamellæ.

141. **MADARIA.** Rays 10–15: disk-flowers numerous, with abortive ovaries. Receptacle convex, fimbrillate-hirsute.

142. **MADIA.** Rays 5–12: disk-flowers numerous, fertile. Receptacle glabrous.

143. **AMIDA.** Rays 1–2, or none; the disk-flowers 2–4, fertile. Achenia compressed–3–4-angular, slightly incurved.

144. **HARPÆCARPUS.** Rays 5–8; the disk-flower solitary, fertile. Ray-achenia obovate-lunate, flat.

Div. 1. **GAILLARDIEÆ**, *DC.* (excl. gen.)—Receptacle not chaffy, nor very deeply alveolate. Rays fertile or neutral, or sometimes none.

Subdiv. 1. **EUGAILLARDIEÆ.**—Branches of the style in the disk-flowers long and filiform (nearly as in Eupatoriaceæ), hispid or glandular-pubescent.

115. GAILLARDIA. *Fougeroux, in mem. acad. sci. Par.* (1786) *p.* 5; *DC. prodr.* 5. *p.* 56; *Gay, in ann. sci. nat.* (*ser.* 2) 11. *p.* 57.

Galardia, *Lam.* (*ill. t.* 708), *Michx.*, *Nutt.*, *& Less.*

Heads many-flowered, radiate; the ray-flowers neutral, in a single series, deciduous. Scales of the involucre in about 3 series, very acute, foliaceous, more or less callous and appressed or erect at the base, above spreading or at length reflexed; the exterior largest. Receptacle convex or hemispherical, fimbrillate (the fimbrillæ rigid or corneous and elongated), or in one species nearly naked. Rays cuneiform, palmately 3-cleft or toothed at the summit. Corolla of the disk with a short tube, and an elongated cylindraceous somewhat inflated 5-toothed limb; the teeth usually subulate, and hispid with jointed hairs. Branches of the style terminated with a very long and acute filiform hispid appendage. Achenia obpyramidal, involucrate with villous hairs. Pappus of 6–10 membranous 1-nerved scales, the nerves produced into awns about the length of the corolla.—Branching (North American) herbs, with the habit of Scabiosa, more or less pubescent with jointed hairs. Leaves alternate, mostly punctate with glandular or pellucid dots, entire, sometimes toothed or lobed; the lower ones often petioled, the upper sessile. Heads on slender naked peduncles terminating the stem or branches. Flowers of the disk violet, or sometimes yellowish. Rays yellow or purple, often 2-colored, dotted with resinous globules, as also the style. Anthers pale yellow.

* *Pappus of the ray-flowers awned like that of the disk.*

1. *G. lanceolata* (Michx.): biennial? puberulent; stem usually branched; the branches elongated; leaves lanceolate or linear, entire or very sparingly serrate or denticulate, ciliolate, mostly obtuse, mucronulate-acuminate; the lower ones somewhat spatulate and slightly petioled, the upper sessile; involucre about the length of the disk, in about 2 series, neither callous nor hirsute at the base; corolla of the disk with long and narrow subulate teeth; chaff of the pappus (7–9) narrowly lanceolate; the fimbrillæ of the receptacle minute abortive teeth, or none!—*Michx.! fl.* 2. *p.* 142; *Gay! in ann. sci. nat. l. c. p.* 63; not of *DC.* G. bicolor, *Pursh, fl.* 2. *p.* 572. (excl. syn. *Fouger.*, *L'Her. &c.*); *Nutt.! gen.* 1. *p.* 175; *Ell.! sk.* 2. *p.* 449; *Hook.! compan. to bot. mag.* 1. *p.* 98. Leysera Caroliniana, *Walt. Car. p.* 211, ex *Pursh*, (perhaps erroneously.)

β. rays abortive or none.—Polypteris integrifolia, *DC.! prodr.* 5. *p.* 659, excl. all the synonymy.

Dry pine woods and barrens, South Carolina! to Florida! Alabama! Louisiana! Arkansas! and Texas! May–Aug.—Root certainly biennial, and sometimes perennial. Stem 1–2 feet high. Leaves clothed with a minute appressed pubescence; the short hairs which fringe the margin incurved. Involucre often tinged with purple. Heads, including the rays, about an inch in diameter. Rays 8–10, small and distant, cuneiform, narrowed at the base, deeply 3-cleft, yellow throughout, or pale violet beneath or at the base, the nerves often violet. Corolla of the disk, as in the other species, either violet-purple or yellow, at length turning violet at the summit. Receptacle nearly or quite naked, by which the species (the only one in the Atlantic Southern States) may always be distinguished.—We have received the rayless and nearly rayless states from Alabama (*Mr. Buckley!*) and Florida (*Dr. Leavenworth!*), and have seen it in the herbarium of De Candolle. It is also mentioned by Michaux.

2. *G. aristata* (Pursh): perennial, villous-pubescent or almost tomentose; stems simple or branched; radical and lower leaves lanceolate, tapering into slender petioles, sinuate-pinnatifid or toothed (the lobes or teeth 2–4 on each side); the uppermost linear or oblong-lanceolate, sessile, usually dilated at the base and partly clasping; involucre very hirsute and callous at the base, equalling or exceeding the disk; corolla of the disk with short broadly subulate teeth; chaff of the pappus (6–8) broadly lanceolate; fimbrillæ of the receptacle few, aristiform, slender, distinct and not dilated at the base, twice or thrice the length of the achenia.—*Pursh, fl.* 2. *p.* 573; *Lindl. bot. reg. t.* 1186; *Hook. bot. mag. t.* 2940, *& fl. Bor.-Am.!* 1. *p.* 315; *DC.! prodr.* 5. *p.* 652; *Gay! in ann. sci. nat. l. c. p.* 57. G. bicolor, *Sims, bot. mag. t.* 1062 (fide *Gay*); *Hook.! fl. Bor.-Am. l. c.* (excl. syn.) G. bicolor β. aristata, *Nutt.! gen.* 2. *p.* 175. G. rustica, *Cass.*; *Desf. cat. hort. Par. ed.* 3, fide *Gay*. G. lanceolata, *DC. l. c.* (excl. syn. *Michx.* & *Ell.*), fide *Gay*.

Plains and prairies, Missouri! and Saskatchawan! to Oregon!—Plant 12–18 inches high; the stems frequently simple. Head 1½–2 inches in diameter. Rays 10–18, crowded, elongated-cuneiform, deep yellow throughout, or sometimes orange or reddish violet at the very base. Achenia scarcely hairy except at the base.—This species presents several forms, which perhaps cannot be limited or defined. That which best accords with Pursh's description (G. aristata, *Hook.! fl. Bor.-Am.*, partly,) has all the upper leaves entire, and the exterior scales of the involucre much longer than the disk: another (G. aristata, *Hook.* Oregon, *Dr. Scouler!*) has a shorter and more woolly involucre; while in the G. bicolor, *Hook. l. c.*, nearly all the lower leaves are frequently sinuate or pinnatifid. Gay's description is excellent, except that we never find the setiform fimbrillæ of the receptacle "nearly as long as the corolla," but sometimes about two-thirds its length: they are few and sparse, so as not to circumscribe the areoleæ, and are somewhat deciduous.

3. *G. pinnatifida* (Torr.): perennial, canescent; stem low, branching; leaves sessile, pinnatifid; the rachis and remote lobes linear; involucre in about 2 series, nearly equal to the disk; chaff of the pappus (7–10) lanceolate, rather shorter than the obtusely 5-toothed corolla; fimbrillæ of the receptacle aristiform, slender, sparse, not dilated at the base, longer than the achenia.—*Torr.! in ann. lyc. New York*, 2. *p.* 214.

Western Arkansas or Missouri, (on the Canadian River?) *Dr. James!*—Plant about a span high, perhaps suffruticose, leafy. Heads rather small. Rays deeply 3-cleft, "purple towards the base, yellow at the summit." The aristate portion of the pappus much shorter than the elongated-lanceolate chaff.

4. *G. pulchella* (Fougeroux): annual, puberulent or slightly hirsute, branching; leaves lanceolate; the lower ones tapering at the base and slightly petioled, somewhat toothed (rarely incised or pinnately lobed); the upper entire, partly clasping, apiculate-acuminate; involucre very hirsute

and callous at the base, longer than the disk; corolla of the disk with attenuate-subulate teeth; chaff of the pappus ovate or lanceolate-oblong, with long awns; fimbrillæ of the receptacle aristiform-subulate, not dilated at the base, slender, longer than the achenia.—*Fougeroux, in mem. acad. l. c. t.* 1 *&* 2; *Cass. in dict. sci. nat.* 18. *p.* 19; *DC. prodr.* 5. *p.* 652; *Gay, l. c.* G. bicolor, *Lam. dict.* 2. *p.* 590, *& ill. t.* 708; *Ait. Kew.* (*ed.* 2) 5. *p.* 129; *Torr.! in ann. lyc. l. c.* (excl. syn.) G. Drummondii, *DC.! l. c.* (excl. syn.), *&* 7. *p.* 292 (excl. syn. G. picta, *Sweet.*), fide *Gay*. G. bicolor *var.* Drummondii, integerrima, *Hook. bot. mag. t.* 3551? Calonnea pulcherrima, "*Buchoz, ic. t.* 126." Virgilia helenioides, "*L'Her. diss.* (*ic.*); *Smith, exot. bot.* 1. *p.* 71, *t.* 37."

Louisiana! Arkansas! and Texas! Introduced into the French gardens from Louisiana in the year 1786, and lost about 1791; again recently introduced by Drummond.—Heads an inch or more in diameter. Rays 10–12, attenuate at the base, deeply 3-cleft, violet-purple, the teeth yellow. Fimbrillæ 4–5 to each areola, rigid, persistent. Achenia involucrate with a villous ferruginous tuft.—In some specimens, (G. Drummondii, *DC.!*) the chaffy portion of the pappus is broadly ovate, in others ovate-oblong or oblong-lanceolate; but we observe no other difference. The fimbrillæ appear to be as long as in G. aristata.—According to Mr. Spach (*Ann. sci. nat.* (*n. ser.*) 15. *p.* 34), this is a perennial species, and to it he unites the following.

5. *G. picta* (Don): suffruticose, much branched; leaves sessile, linear-lanceolate, scarcely if at all dilated or clasping at the base, entire, or the lower ones with a few coarse teeth, and the upper denticulate; scales of the involucre equalling or exceeding the disk, hairy, callous and somewhat hirsute at the base; corolla of the disk with long subulate teeth; chaff of the pappus oblong-lanceolate; fimbrillæ of the receptacle 4–6 to each areola) subulate, rigid, dilated and triquetrous at the base, rather longer than the achenia. *Gay, l. c.—Don. in Brit. fl. gard. ser.* 2. *t.* 267. (excl. habitat Louisiana.) G. bicolor, var. Drummondii, *Hook. bot. mag. t.* 3368.

Rio Brazos, Texas, *Drummond!*—Leaves rather thick, often with a brownish margin, scabrous-ciliolate. Heads 12–15 lines in diameter. Rays about 12, broadly cuneiform, reddish-orange; the teeth yellow. Fimbrillæ stout, carinate at the base.—Resembles the preceding. In the indigenous, as well as in our cultivated specimens, the lower leaves are frequently sinuate-pinnatifid. Among the former, there is a state of the species with what appears like an annual root, and the stems only 3 inches high bear a single head.

* * *Pappus of the ray-flowers awnless.*

6. *G. amblyodon* (Gay): annual; stem hirsute-pubescent, simple or branching; leaves sessile, denticulate, scabrous-pubescent; the lowest somewhat spatulate; the others oblong-linear, somewhat auriculate at the base and clasping; involucre hirsute, rather longer than the disk, the scales callous and appressed for nearly half their length; corolla of the disk with short triangular rather obtuse teeth; chaff of the pappus lanceolate; fimbrillæ of the receptacle aristiform, unequal, not dilated at the base, mostly longer than the achenia.—*Gay! in ann. sci. nat. l. c. p.* 63.

Texas, *Drummond!*—Stem 10–18 inches high. Leaves numerous, rather thick, serrate towards the summit. Scales of the involucre imbricate in 3 to 4 series, more erect and callous at the base than in any other species, the intermediate ones longer than the exterior. Rays about 12, elongated cuneiform, deeply 3-toothed, brownish-purple throughout in the dried state. Pappus of the ray composed of 5–7 short ovate or obovate membranous scales, three or four of which are more or less mucronate, the others lacerate or denticulate at the summit.

116. PALAFOXIA. *Lagasca, nov. gen. h. Madr.* (1815) *p.* 26; *DC.*

Paleolaria, *Cass.* (1816), *Less.*—Polypteris, *Nutt.* (1818); not of *Less.*, nor of *DC.*

Heads 10–30-flowered; the flowers all perfect and tubular; or the exterior series either imperfectly or manifestly radiate; the rays 3-cleft, pistillate. Scales of the obconical or campanulate involucre 8–15, membranaceous or herbaceous with scarious tips, appressed (or spreading in fruit) in 1–2 series, shorter than the disk. Receptacle small, flat, naked or slightly alveolate. Corolla of the disk with a slender tube and an expanded deeply 5-cleft or 5-parted limb; the lobes linear or lanceolate, spreading, glabrous. Branches of the style long and filiform, flattish, glandular-pubescent throughout. Achenia quadrangular, slender, tapering to the base, minutely pubescent. Pappus of 6–12 membranaceous denticulate pinnately striate scales, furnished with a strong midnerve, which is thickened at the base and often somewhat produced at the apex; the pappus of the exterior flowers often much shorter.—Herbaceous or suffruticose (chiefly Mexican and Texan) cinereous or strigose-scabrous plants; the loosely paniculate or corymbose branches and peduncles often glandular. Leaves linear or lanceolate, entire, somewhat petioled, alternate, scattered, or the lower opposite, 1–3-nerved. Flowers white, flesh-colored, or purple.

§ 1. *Heads radiate, or with some of the marginal flowers palmate or irregular, and with a smaller pappus than the disk-flowers: scales of the involucre somewhat herbaceous, equal, in 1–2 series, often somewhat embracing the exterior achenia (nerves of the lobes of the disk-corolla intramarginal.)*—EUPALAFOXIA.

1. *P. Hookeriana:* leaves lanceolate, 1–3-nerved; heads (large) many-flowered, radiate; scales of the involucre 12 or more, very glandular (as well as the peduncles and branches), imbricated in 2 series; the exterior lanceolate; the interior obovate-lanceolate or oblong; rays 8–10, exserted, broadly cuneiform, deeply 3-cleft; limb of the disk-corolla 5-cleft below the middle; pappus of the disk-flowers of 6–8 narrowly lanceolate acuminate scales, as long as the attenuated hairy achenium; in the rays of as many obovate or spatulate very obtuse rigid scales, many times shorter than the nearly glabrous achenia.—P. Texana, *Hook.! ic. pl. t.* 148, not of *DC.*

β. subradiata: smaller; rays few and inconspicuous, irregular or palmate.—Stevia spacelata, (*Nutt. mss.?*) *Torr.! in ann. lyc. New York*, 2. *p.* 214.

Texas, *Drummond!* *β.* Arkansas, *Dr. James!* Texas, *Mr. Callana!*—Plant apparently 1–2 feet high, rather stout. Heads three-fourths of an inch in length; the showy rose-purple rays in Drummond's plant half an inch or more in length, resembling a Gaillardia; the disk-flowers also rose-color; the tube glandular. Scales of the involucre not embracing the achenia; which are very slender, and in the disk one-third of an inch long.—Between the long acuminate pappus of the central flowers, and the very short and obtuse nearly corneous scales of the rays, there is almost a complete gradation; the exterior flowers which have a tendency to become radiate presenting a shorter and obtuser pappus.—This is the most showy species of the genus, and would be very ornamental in cultivation.

2. *P. Texana* (DC.): leaves linear-lanceolate, 1-nerved, or the lower 3-nerved; heads (rather small) many-flowered, discoid, 2 or 3 of the marginal flowers usually palmate or imperfectly radiate, not exceeding the disk; scales of the involucre 8–12, lanceolate, strigose-puberulent and slightly glandular, scarcely imbricated; limb of the corolla 5-cleft to the base; pappus of the disk-flowers of 8 lanceolate-ovate acute or cuspidate scales, rather shorter than the obpyramidal hairy achenium; in the marginal flowers broadly ovate, mostly obtuse, much shorter.—*DC.! prodr.* 5. *p.* 125.

Texas, *Berlandier! Drummond!*—♃ ? A more slender plant than the preceding, scarcely glandular, with much smaller heads: the flowers apparently flesh-colored; the linear lobes of the corolla rather longer than the almost glabrous tube. Scales of the involucre scarious at the tip, partly embracing the exterior achenia.

§ 2. *Heads discoid, with the flowers and pappus all similar; the latter of short and rounded scales (nerves of the lobes of the corolla intramarginal): scales of the involucre nearly in a single series, equal, somewhat herbaceous, partly embracing the exterior achenia.*—Florestinaria.

3. *P. callosa:* strigose-cinereous; the diffuse and dichotomous slender peduncles glandular; leaves narrowly linear, 1-nerved; heads (small) turbinate, 10–12-flowered; scales of the involucre 8–10, oblong, obtuse; limb of the corolla 5-cleft to the base; the oblong-linear lobes much longer than the tube; scales of the pappus 8, roundish-obovate, about one-fourth the length of the obpyramidal minutely hairy achenium.—Stevia callosa, *Nutt.! in jour. acad. Philad.* 2. *p.* 121; *Bart. fl. Amer. Sept. t.* 46. Florestina callosa, *DC.! prodr.* 5. *p.* 655.

Western Arkansas, *Nuttall!* Texas, *Drummond! Dr. Riddell!*—① ? Stem slender, a foot high, corymbose at the summit. Leaves often 2 inches long, a line wide, frequently fascicled in the axils. Involucre 3 lines long; the scales slightly scarious at the apex. Flowers purple. Pappus uniform and resembling that of the ray-flowers in P. Hookeriana: the scales opaque and thickened in the centre and at the base, dilated above, with denticulate-lacerate margins.—The style is exactly as in Palafoxia, and very different from that of Florestina; and the leaves are undivided.

§ 3. *Heads discoid, with the flowers and pappus all similar; the latter of lanceolate pointed scales (nerves of the lobes of the corolla marginal): scales of the involucre somewhat scarious or membranaceous, flat, in 2–3 series; a few of the exterior small and bracteolate.*—Polypteris, Nutt.[*]

4. *P. integrifolia:* stem slightly scabrous, fastigiate-corymbose above; leaves linear-lanceolate, 1-nerved, scabrous; heads (rather large) many-flowered; scales of the involucre 10–15; the inner oblong, obtuse; the exterior linear-lanceolate, loose; limb of the corolla 5-cleft below the middle; scales of the pappus 8–9 (12–14, *Nutt.*), linear-lanceolate, attenuate-acuminate, about the length of the slender slightly pubescent achenium.—Polypteris integrifolia, *Nutt.! gen.* 2. *p.* 139; *Ell.! sk.* 2. *p.* 314, not of *DC.* Paleolaria fastigiata, *DC. prodr.* 5. *p.* 125.

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[*] The character of Polypteris in *DC. prodr.* 5. *p.* 659, is drawn from a rayless state of Gaillardia lanceolata.

Dry pine woods, Southern Georgia! and Florida! Aug.-Oct.—♃ Stem 2–5 feet high. Heads half an inch or more in length. Corolla, and sometimes the pappus purplish; the tube slightly pubescent. Achenia 3–4 lines long, blackish; the feathery pappus somewhat lacerate-denticulate.

117. CHÆNACTIS. *DC. prodr.* 5. *p.* 659; *Hook. & Arn. bot. Beechey.*

Heads many-flowered; the flowers all tubular and perfect; the exterior series (rays) more or less dilated and larger than the others, irregular or palmate. Scales of the campanulate involucre about 20, linear, nearly in a single series. Receptacle alveolate. Corolla glabrous or slightly glandular, the lobes hirsute-puberulent; of the disk tubular, slightly dilated above, 5-toothed; of the ray expanded or ventricose above, 5-cleft. Branches of the style linear-filiform, with long and slender acuminate hirsute appendages. Achenia linear, tapering to the base, 4-angled. Pappus of 4–12 somewhat unequal membranous nerveless scales, with irregularly denticulate margins; in the disk-flowers rather shorter than the corolla and about the length of the achenium; in the ray much shorter, obtuse.—Biennial, sometimes annual or perennial? herbs (natives of California, Oregon, and the Rocky Mountains); with alternate pinnately dissected leaves, and rather large heads terminating the simple or corymbose branches.

§ 1. *Flowers mostly yellow; those of the ray irregular or palmate, exserted: achenia minutely strigose: pappus of* 4–6 *scales; in the disk oblong-lanceolate, acute, in the ray much shorter and obtuse.*—Euchænactis.

1. *C. glabriuscula* (DC.): perennial or suffruticose; stem branching; leaves and involucre nearly glabrous, or with scattered cobwebby hairs; the expanded rays palmatifid, evidently longer than the disk; branches naked at the summit; lobes of the leaves 5–6 pairs, rather obtuse; the uppermost leaves linear and entire. *DC. prodr.* 5. *p.* 659.

California, *Douglas.*—We have no specimen of this plant. It is said to be 8 to 16 inches high, arenose-villous in the young state, but glabrous when mature; the peduncles, or naked summit of the branches, 2½ inches long. Scales of the pappus 5–6.

2. *C. tenuifolia* (Nutt.): annual or biennial, nearly glabrous; the involucre and short peduncles glandular-viscid; leaves 1–2-pinnately parted; the divisions irregular, small, linear; the uppermost leaves linear and 3–5-cleft at the apex; ray-flowers funnel-form, expanded, scarcely irregular, rather longer than the disk.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 375.

St. Diego, California, *Nuttall!* May.—About a foot high, much branched. Divisions of the leaves numerous, 2–4 lines long. Heads as large as in the following species. Flowers bright yellow. Scales of the involucre numerous, narrowly linear, concave; a few similar scales also interposed between the ray and disk-flowers. Pappus of 4 unequal scales.—The leaves in our specimens by no means resemble those of Hymenopappus filifolius, but those of the following species do so. Nerves of the lobes of the corolla intramarginal, as in Hymenopappus.

3. *C. lanosa* (DC.): annual, clothed with a soft and loose somewhat deciduous white wool; stems branched from the base, simple and naked above; leaves (often glabrous when old) on slender petioles, pinnately parted; the

segments 3–5, narrowly linear, entire; the uppermost leaves linear and entire; ray-flowers tubulose-infundibuliform, somewhat irregular, scarcely exceeding the disk.—*DC.! prodr.* 5. *p.* 659.

California, *Douglas!*—Plant 8–12 inches high; the naked summit of the branches often 6 inches long. Involucre very woolly when young. Flowers light yellow. Lobes of the leaves one-half to one inch long.

4. *C. stevioides* (Hook. & Arn.): annual, somewhat glabrous; stem corymbosely branched; leaves somewhat woolly when young, pinnately divided; the divisions linear, obtuse, entire, or sometimes pinnatifid; involucre glandular-puberulent; flowers white or flesh-color; those of the ray tubulose-infundibuliform, scarcely irregular, about the length of the disk.—*Hook. & Arn.! bot. Beechey, suppl. p.* 353.

Interior of Oregon, in the Snake Country, *Mr. Tolmie!*—Plant 3–5 inches high. Heads smaller than the preceding. Scales of the involucre broadly linear. Pappus of 4–5 scales. Peduncles short. Upper leaves entire.

§ 2. *Flowers pale rose or flesh-color; those of the ray infundibuliform or expanded at the summit, regular, not longer than the others: achenia villous-hirsute: pappus of* 8–12 *scales, in the disk oblong-linear, scarcely shorter than the somewhat glandular corolla, in the ray much shorter, obtuse.*— Macrocarphus, *Nutt.* [illegible]

5. *C. achilleæfolia* (Hook. & Arn.): tomentose-canescent; stems low, corymbose at the summit; leaves pinnately divided; the divisions crowded, linear or oblong, obtuse, mostly pinnatifid, the lobes very small; scales of the somewhat obconical involucre pubescent or tomentose; achenia hirsute; scales of the pappus in the disk-flowers linear, acutish, nearly the length of the corolla.—*Hook. & Arn.! bot. Beechey, suppl. p.* 354. Macrocarphus achilleæfolius, *Nutt.! l. c.* [illegible]

Dry plains, interior of Oregon, (Snake Country) *Mr. Tolmie!* to the Rocky Mountains on the Colorado of the West, *Nuttall!* July–Aug.—② Stems several from the same root, 4–6 inches high. Leaves somewhat glabrous when old, densely woolly-canescent when young. Heads as large as in C. Douglasii, to which it is very closely allied. Burke's [illegible]!

6. *C. Douglasii* (Hook. & Arn.): loosely tomentose; stem corymbose at the summit; leaves pinnately divided; the divisions scattered, linear or oblong, obtuse, sinuate-toothed or pinnatifid; the lobes minute; scales of the hemispherical involucre glandular-pubescent (when young tomentose); achenia hirsute-villous; scales of the pappus linear-oblong, truncate.—*Hook. & Arn.! l. c.*, under C. achilleæfolia. Hymenopappus Douglasii, *Hook.! fl. Bor.-Am.* 1. *p.* 316; *Nutt.! in jour. acad. Philad.* 7. *p.* 30; *DC.! prodr.* 5. *p.* 658. Macrocarphus Douglasii, *Nutt.! in trans. Amer. phil. soc. l. c.* [illegible]

Dry barren soil, interior of Oregon! and Rocky Mountains! July–Aug. — ② Stems 1–3 feet high, fastigiate, somewhat glabrous when old. Heads half an inch in diameter. Pappus silvery; the scales toothed or lacerate at the apex; in the disk-flowers shorter than the corolla. [illegible] This [illegible] the length of the [illegible] must be limited [illegible]

Subdiv. 2. Euheleniеæ.—Branches of the style in the disk-flowers obtuse or truncate, or tipped with a cone, pubescent or barbellate at the apex.

118. HYMENOPAPPUS. *L'Her.; Cass.; DC. prodr.* 5. *p.* 658.

Heads many-flowered; the flowers all tubular and perfect, similar and regular. Scales of the involucre 6–12, somewhat in 2 series, oval or obovate, membranaceous or petaloid (white), obtuse. Receptacle small, naked. Corolla with a slender glandular tube, and a dilated campanulate throat; the lobes revolute. Anthers exserted. Branches of the style linear, with a very short obtuse or conical appendage. Achenia turbinate, contracted at the base as if stipitate, broad at the summit, many-striate, somewhat 4-sided when mature. Pappus of 12–20 short and obtuse membranaceous (nearly nerveless) scales, in a single series.—Biennial or perennial (N. American) herbs, clothed with a white often deciduous wool, or somewhat glabrous; with sulcate-angled stems, and corymbose or solitary heads. Leaves alternate, pinnately lobed or divided. Flowers whitish, in a single species yellow.

* *Scales of the spreading involucre, and often the bracts, petaloid (whitish): corolla with a filiform tube, and a deeply cleft limb (the nerves of the lobes intermediate between the margins and the axis).*

1. *H. scabiosæus* (L'Her.): clothed with a more or less deciduous appressed wool; leaves pinnately, or the radical and lower bipinnately parted; the segments linear or oblong, entire or sparingly toothed; heads (rather large) in nearly simple and loose small corymbs; scales of the involucre (about 10) roundish-obovate, petaloid, dilated, exceeding the disk; achenia somewhat hairy; scales of the pappus very small.—"*L'Her. diss. cum ic.*"; *Michx.! fl.* 2. *p.* 104; *Pursh, fl.* 2. *p.* 519 *&* 742; *Ell. sk.* 2. *p.* 313; *DC. prodr.* 5. *p.* 658. Rothia Caroliniensis, *Lam. jour. hist. nat.* 1. *p.* 16, *t.* 1, *& ill. t.* 667.

Dry pine barrens, and around ponds, South Carolina! to Florida! Also Western Louisiana, *Dr. Hale!* April–May.—② or ♃? Stem 1–3 feet high. Leaves variable, when young often tomentose, woolly or canescent on both sides, at length frequently glabrous or nearly so, as well as the stem. Achenia somewhat hairy when young, minutely glandular-pubescent (under a lens) when mature.

2. *H. artemisiæfolius* (DC.): stem woolly when young, paniculate-branched; leaves densely tomentose-canescent beneath; the radical and lower cauline petioled, lanceolate-oblong, entire, or often sinuate-incised or pinnatifid, especially towards the base; the upper sessile, pinnatifid with the terminal lobe largest, the lateral lobes lanceolate, acute; the uppermost often entire; heads (small) numerous, in loose compound corymbs; scales of the involucre (8–10) oval or oblong, unequal, petaloid, scarcely exceeding the disk; achenia villous; scales of the pappus somewhat conspicuous, spatulate-oblong.—*DC. prodr.* 5. *p.* 658.

Texas, *Berlandier, Drummond! Mr. Lindheimer!*—② Stem 2–3 feet high. Radical leaves 4–6 inches long. Corymb large, glandular-tomentose. Heads much smaller than in the preceding.

3. *H. corymbosus:* somewhat tomentose when young, at length nearly glabrous; stem much branched; leaves 1–2-pinnately divided, the divisions or lobes narrowly linear, often incised or toothed; heads (small) very numerous, in compound corymbs; scales of the involucre (8–12) oblong-obovate, petaloid (the base mostly herbaceous), about the length of the disk; achenia glandular, somewhat pubescent on the angles; scales of the pappus minute, orbicular.

β. Nuttallii: lower leaves 3-pinnately, the upper 1–2-pinnately divided or parted; the segments very narrowly linear, mostly entire.—H. tenuifolius, *Nutt.! in herb. DC. &c.* (pl. Arkans.), not of *Pursh.*

Prairies of Arkansas, *Dr. Leavenworth!* Texas, *Drummond!* β. Red River, Arkansas, *Nuttall!*—② Stem 2–3 feet high, loosely corymbose above; the branchlets minutely tomentose and somewhat glandular. Lower leaves somewhat petioled. Heads one-fourth to one-third of an inch in diameter. Scales of the involucre unequal, the larger somewhat dilated.—The pappus in var. β. is somewhat more conspicuous, and the lobes of the leaves more slender. So far as relates to the specimen of Nuttall, this is the H. tenuifolius of De Candolle, who, unacquainted with Pursh's plant, has modified the character of that author, so that it no longer accords with either species.

* * *Scales of the appressed involucre with whitish or scarious margins: tube of the corolla not longer than the 5-toothed or cleft limb.*

4. *H. tenuifolius* (Pursh): lanuginous-canescent; stem stout, corymbose at the summit; leaves bipinnately divided; the divisions very narrowly linear, entire, rigid, somewhat glabrous; heads in a loose compound corymb; scales of the involucre (6–8) oval, appressed, much shorter than the fully developed disk; achenia very villous; scales of the pappus spatulate-oblong, as long as the tube of the corolla.—*Pursh! fl.* 2. *p.* 742; *Nutt.! gen.* 2. *p.* 139; *DC. prodr.* 5. *p.* 658. (excl. syn. *Nutt. pl. Arkans.*, and a part of the character founded on it.)

Upper Missouri, *Bradbury! Nuttall!* (v. sp. in *herb. Lamb.*) *Mr. Nicollet!* on gravelly hills, &c. May–June.—② Stem 12–15 inches high. Leaves sessile, rigid, the pinnæ of the lower in 8–12 pairs; the divisions 2–4 pairs, irregular and unequal; occasionally somewhat 3-pinnatifid. Heads pedunculate, fastigiate, a third of an inch in diameter; the involucre not spreading and petaloid as in all the preceding. Flowers greenish-white. Throat of the corolla short, abruptly inflated, about the length of the tube, deeply 5-toothed. Achenia more villous, and the pappus more conspicuous than in any other species; the scales of the latter somewhat denticulate at the apex.

5. *H. filifolius* (Hook.): tomentose-canescent, the pubescence somewhat deciduous; stem loosely paniculate-branched; leaves 1–2-pinnately divided; the divisions scattered, rigid, filiform-linear, canaliculate; peduncles mostly solitary; scales of the involucre (about 12) oval, appressed, shorter than the disk; achenia villous; scales of the inconspicuous pappus somewhat lacerate.—*Hook.! fl. Bor.-Am.* 1. *p.* 317; *Nutt.! in trans. Amer. phil. soc. l. c. p.* 374.

Arid plains of the upper Oregon, *Douglas! Nuttall!*—♃? Stem 10–20 inches high. Lower leaves petioled: the divisions few, often simple and an inch or more in length. Heads fully as large as in the preceding. Achenia less angled or tapering at the base, not dilated at the apex; the hyaline scales of the pappus nearly concealed among the villous hairs of the achenium, and shorter than the tube of the (white) corolla.—In Mr. Nuttall's specimens, the pappus is more conspicuous than in those collected by Douglas.

6. *H. luteus* (Nutt.): dwarf, woolly-canescent; stems several from a thick caudex; leaves petioled, chiefly radical, pinnately-divided; the divisions very much crowded, small, pinnatifid or trifid; the lobes very short, linear, obtuse; heads (small) somewhat paniculate; scales of the involucre (about 12) oblong-obovate, appressed, rather shorter than the disk; achenia very villous; scales of the pappus lacerate or denticulate, shorter than the tube of the (yellow) corolla.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Rocky Mountains near the sources of the Colorado of the West, particularly on Ham's Fork, *Nuttall!*—♃ Stems 4–10 inches high, bearing 3–5 heads. Involucre tomentose, scarious. Pappus nearly as long as in H. tenuifolius, but not exserted beyond the very long villous hairs of the achenium. Throat of the corolla campanulate, 5-toothed; the nerves marginal.—The plant has the aspect of a Chænactis.

119. BAHIA. *Lagasca, nov. gen., in elench. hort. Madr. p.* 28; *DC. l. c.*

Bahia & Eriophyllum, *Lagasca.*—Trichophyllum, *Nutt.*

Heads many-flowered; the ray-flowers 5–11, ligulate, pistillate; those of the disk tubular, perfect. Scales of the subglobose, ovoid, or campanulate involucre in a single or somewhat double series, equal, appressed. Receptacle naked, or somewhat alveolate-fimbrillate. Tube of the corolla glandular-hairy. Branches of the style in the disk-flowers thickened at the apex, obtuse. Achenia 4-sided, linear, or oblong-turbinate. Pappus of 4–10 oval or oblong and mostly obtuse scarious nerveless small scales.—Perennial woolly herbs or suffruticose plants (natives of the Pacific coast of America from Chili to Nootka, of Oregon, Mexico, &c.); with opposite or alternate often cleft or divided leaves, and solitary or corymbose and clustered heads, with yellow rays, which often turn brownish in drying.

* *Shrubby or suffrutescent: heads corymbose.*

1. *B. artemisiæfolia* (Less.): leaves crowded, mostly alternate, nearly glabrous above, densely lanate-tomentose and white beneath, remotely pinnatifid (the lobes 1–3 on each side, linear or oblong, obtuse); some of the upper often entire, spatulate-linear; scales of the cylindraceous involucre scarcely woolly, oblong; rays small, oval; achenia minutely hispid along the angles; scales of the pappus mostly 8, obtuse; four of them (corresponding to the angles of the achenium) linear, the others oblong and rather shorter.—*Less. in Linnæa,* 5. *p.* 160, *&* 6. *p.* 253; *Hook. & Arn.! bot. Beechey, p.* 149, *& suppl. p.* 353; *DC. prodr.* 5. *p.* 567. (Heads in the plant of Chamisso 2½ lines long; in that of Douglas &c. (β. Douglasii, *DC.! l. c.*) 3–4 lines long.)

β.? lower leaves sparingly pinnatifid; the upper mostly entire.—B. stæchadifolia β. Californica, *DC. l. c.; Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 374.

California, *Menzies, Chamisso, Douglas! Nuttall!* &c.—A low shrub. Heads on distinct peduncles when the compact corymbs are simple, but often somewhat fascicled and sessile.—Without much doubt the B. stæchadifolia β. Californica of De Candolle is a state of his B. artemisiæfolia β. Douglasii; but we have not the means of satisfying ourselves whether the latter has been correctly united with the B. artemisiæfolia of Lessing, which is said to have sessile or slightly pedicillate heads, only two and a half lines in length.

2. *B. confertiflora* (DC.): stem and branches densely arenose-tomentose or woolly; leaves alternate, canescently tomentose beneath, pinnately 5–7-parted, with narrowly linear segments, or often 3-parted, with the middle division 3-toothed at the apex; heads (small) in dense corymbs; scales of the ovoid involucre (about 5) obovate, retuse, woolly-canescent; rays 3–4, small, nearly orbicular; achenia slightly scabrous-pubescent; scales of the pappus 8–10, oblong, denticulate, nearly equal.—*DC.! prodr.* 5. *p.* 657; *Nutt.! in trans. Amer. phil. soc. l. c.*

California, *Douglas! Nuttall!* April.—Plant shrubby at the base, about a foot high. Lower divisions of the leaves largest. Heads clustered, but on distinct peduncles when in fruit. Involucre about two lines long.

3. *B. trifida* (Nutt.): stem and involucre closely arenose-woolly when young; leaves alternate, cuneate-oblong, closely sessile and partly clasping, loosely tomentose beneath, 3-cleft at the apex; heads (small) in crowded corymbs; scales of the obovoid involucre 5, broadly obovate; rays 4–5, broadly oval, small; achenia glabrous, or slightly hairy along the angles; scales of the pappus 10–14, equal, oblong, obtuse, nearly entire.—*Nutt.! in trans. Amer. phil. soc. l. c.*

St. Barbara, California, *Nuttall!* April.—Growing with the preceding; the heads about the same size. Leaves very numerous, about half an inch long, nearly glabrous above.

4. *B. achillæoides* (DC.): woolly-tomentose throughout; leaves alternate, cuneiform, with a long attenuate base, bipinnatifid above; the lobes (2–4 pairs) small, entire or toothed; heads (rather large) solitary, terminating the sparingly corymbose branches or peduncles; scales of the globose very woolly involucre about 10, ovate-lanceolate, acute; rays 8–10, oblong; achenia hairy on the angles; scales oval or oblong, somewhat unequal, laciniate-toothed at the apex.—*DC.! prodr.* 5. *p.* 637.

California, *Douglas!*—Suffruticose, branched from the base. Leaves less than an inch long, laciniate-bipinnatifid. Heads not clustered. Rays 3–4 lines long.

* * *Herbaceous: heads solitary on naked simple peduncles.*

5. *B. lanata* (Nutt.): stems mostly branched from the decumbent base, lanuginous-tomentose; leaves lanuginous-tomentose beneath, alternate, or the lower opposite, pinnatifid; the uppermost often linear and entire; heads (large for the genus) on naked peduncles; rays large; achenia glabrous.—*DC.! prodr.* 5. *p.* 637; *Nutt.! in trans. Amer. phil. soc. l. c.* Achillea lanata, *Pursh, fl.* 2. *p.* 560. Trichophyllum lanatum, *Nutt. gen.* 2. *p.* 167; *Hook.! fl. Bor.-Am.* 1. *p.* 315; *Fisch. & Meyer, 2nd ind. sem. hort. St. Petersb.* 1835, *p.* 51. Eriophyllum cæspitosum, *Dougl.! in Lindl. bot. reg. t.* 1167. Helenium lanatum, *Spreng. syst.* 3. *p.* 574. Phialis, *Spreng. gen. p.* 631.

β. tenuifolia: stem slender and often simple; heads smaller; divisions of the leaves narrowly linear, entire, or often lobed.—B. tenuifolia, *DC.! l. c.; Nutt.! l. c.*

Oregon, common from the Rocky Mountains to the Coast! (The B. tenuifolia, *DC.* was probably collected in Oregon instead of California.)—Stems 10–15 inches high, frequently branched above, with the peduncles somewhat corymbose. Segments of the leaves 1–3 pairs. Involucre subglobose, composed, as in the following species, of about 12 oval or oblong connivent scales, which are all clothed with a dense and intricate wool. Scales of the pappus oblong and obtuse, somewhat unequal, denticulate at the apex, often a little united at the base.

6. *B. leucophylla* (DC.): lanuginous-tomentose throughout; stems branched from the base, naked above; leaves alternate and sometimes opposite, oblanceolate or oblong-spatulate, 3-cleft or lobed at the apex, or somewhat pinnately incised, or often (especially the upper) entire; heads solitary on long naked peduncles; rays oblong, rather large; achenia glabrous.—*DC.! prodr.* 5. *p.* 656. B. integrifolia, *DC. l. c.* Trichophyllum integrifolium, *Hook. fl. Bor.-Am.* 1. *p.* 316. T. multiflorum, *Nutt.! in jour. acad. Philad.* 7. *p.* 37.

Rocky Mountains! to the coast of Oregon! and Nootka, &c. July.—Stems 5–12 inches high. Leaves an inch or more in length; the upper linear. Heads 25–35-flowered, as large as in the preceding; the scales about 12, oval-oblong. Pappus of mostly 4 oblong or lanceolate acutish scales, and as many alternate smaller scales, the latter often denticulate at the apex. The leaves vary greatly.

7. *B. gracilis* (Hook. & Arn.): lanuginous-tomentose throughout; stems branched from the base, naked above; leaves alternate, attenuate, linear, obtuse, entire; the lower somewhat spatulate; heads terminating the long simple peduncles; rays large; achenia glandular-pubescent.—*Hook. & Arn.! bot. Beechey, suppl. p.* 353.

Interior of Oregon, Snake Fort, *Mr. Tolmie!*—Stems slender, 8–10 inches high. Leaves nearly 2 inches long, about a line wide. Scales of the involucre oblong. Rays bright yellow in the dried specimens. Pappus of about 10 small oblong scales.

‡ *Species unknown to us.*

8. *B. oppositifolia* (Nutt., *under* Trichophyllum): decumbent and much branched, canescently pubescent; leaves opposite, all palmately 3-cleft; the segments ligulate, simple, or divaricately subdivided; peduncle filiform, mostly dichotomal, scarcely longer than the leaves. *Nutt.—DC. prodr.* 5. *p.* 657. Trichophyllum oppositifolium, *Nutt. gen.* 2. *p.* 167.

Denudated sterile hills near Fort Mandan on the Missouri, abundant. July–Aug.— ♃ ? Stem diffuse, 6–12 inches high. Leaves petiolate, canescent; the pubescence very short: segments about an inch long, thickish, linear, somewhat obtuse. Peduncle slender, 1–2 inches long. Involucre oblong-cylindrical; the scales 5–8, oblong-ovate: rays about the same number, very short. Pappus minute, of 5–8 partly obtuse and somewhat lacerate scales. Achenia nearly smooth. Plant sensibly bitter, and destitute of aroma. *Nuttall.*

120. ACTINOLEPIS. *DC. prodr.* 5. *p.* 655; *Hook. ic. pl. t.* 325.

Heads several-flowered; the ray-flowers 3–5, ligulate, pistillate; those of the disk tubular, perfect and fertile! Involucre oblong-campanulate, bracteate at the base, tomentose; the scales about 5, oblong-obovate, obtuse, connivent after flowering, and involute so as to include the achenia of the ray. Receptacle small, convex, naked. Rays slightly exserted, oval, mostly 2-toothed, raised on a slender tube. Corolla of the disk with a slender tube (pubescent with jointed hairs), and a spreading deeply 5-lobed limb. Branches of the style in the disk-flowers short, rather flat, terminated by a very obtuse puberulent cone, or almost truncate. Achenia slender, terete, striate, tapering to the base; those of the ray minutely hairy, crowned with a (somewhat deciduous?) pappus of 10–15 narrow and almost aristiform acute unequal scales, slightly united at the base; those of the disk similar, but glabrous and destitute of pappus.—A low (2–6 inches) and slender diffusely branched annual herb, clothed with loose somewhat deciduous wool; the stems corymbosely branched. Leaves alternate (opposite, *DC.*), very small (2–3 lines long), sessile, cuneate-obovate, deeply and very obtusely 3-toothed at the apex. Heads small, solitary and sessile in the forks of the stem, and somewhat glomerate at the extremity of the branches; the bracts (1–2) similar to the leaves. Flowers of the disk and ray yellow. Anthers nearly white. Achenia black.

A. multicaulis (DC.! l. c.)—*Hook. & Arn.! bot. Beechey, suppl. p.* 353.
California, *Douglas!*—Our description differs considerably from that of De Candolle, who perhaps examined an imperfect specimen. He describes the disk-flowers as probably sterile with the style undivided, and does not notice the involution of the involucral scales so as nearly to enclose the ray-achenia, as in the Madieæ; but we find the disk-flowers (perhaps every one) fertile.

121. LASTHENIA. *Cass.; DC. in Lindl. bot. reg. t.* 1780, *& prodr. l. c.*

Heads many-flowered; the ray-flowers 5–15, pistillate, ligulate, obliquely truncate and included, or oblong and exserted; those of the disk tubular, perfect. Involucre as long as the disk, campanulate, composed of 5–15 scales united nearly to the summit; the teeth triangular, acute, ciliate. Receptacle conical, papillose. Corolla of the disk with a slender glandular-pubescent tube, and a campanulate 5-toothed limb. Branches of the style in the disk-flowers terminated by a short cone. Achenia linear-oblong, compressed, appressed-pubescent or glabrous. Pappus of about 10 unequal acute lacerate-toothed chaffy scales, or none!—Annual diffusely branched (Chilian and Californian) herbs, growing in wet places; with opposite linear or lanceolate mostly entire leaves, somewhat connate at the base. Heads solitary, terminating the branches; the elongated peduncles more or less dilated and obconical at the base of the involucre. Flowers yellow: the anthers yellowish.

§ 1. *Pappus of* 9 *or* 10 (*rarely* 5?) *unequal chaffy scales: rays very short, included.*—LASTHENIA, Cass. (Rancagua, *Pœpp. & Endl.*)

1. *L. glaberrima* (DC.): involucre about 15-toothed; pappus as long as the disk-corolla, and nearly equalling the obliquely truncate included rays; the scales lanceolate or oblong, the larger ones cuspidate; plant glabrous throughout.—*DC.! prodr.* 5. *p.* 664; *Hook. & Arn. bot. Beechey, l. c.* L. Californica, *DC. ined.*, not of *Lindl.*
California, *Douglas!*—Plant slender, 6–12 inches high. Leaves 2–3 inches long, 1–2 lines wide. Corolla much shorter than the achenia. (Scales of the pappus 5, according to De Candolle.)

§ 2. *Pappus none: rays exserted, conspicuous.*—HOLOGYMNE, Bartl. (Lasthenia, *Lindl., Endl.*)

2. *L. glabrata* (Lindl.): involucre 10–15-toothed; peduncles and young leaves slightly and minutely pubescent.—*Lindl.! bot. reg. t.* 1780; *DC.! l. c.; Nutt.! in trans. Amer. phil. soc. l. c.* L. Californica, *Lindl. bot. reg. l. c.* (note) *& t.* 1823; but not the plant to which this name was originally applied by De Candolle. Hologymne glabrata, *Bartl. ind. sem. Gœtt.* 1837 *&* 1839, *& in Linnæa,* 12. *suppl. p.* 81; *Hook. & Arn. bot. Beechey,*

suppl. p. 354; *Hook. bot. mag t.* 3730; *Fisch., Meyer, & Lallem. ind. sem. St. Petersb.* 1840.

California, *Douglas! Nuttall!* Common in cultivation.—Closely resembles the preceding, except in the conspicuous rays, rather larger heads, and entire absence of the pappus; the corolla of the disk is also much longer; the lobes sparsely barbellate. The cultivated specimens are often entirely glabrous. We are only acquainted with a single species of Hologymne.

122. BURRIELIA. *DC. prodr.* 5. *p.* 663.

Heads many-flowered; the ray-flowers 3–12, pistillate, ligulate (rarely very short); those of the disk tubular, perfect. Scales of the spreading or somewhat campanulate involucre 3–12, oval, acuminate, in 1–2 series, nearly equal, a little longer than the disk. Receptacle conical, papillose. Corolla of the disk with a slender tube, and an expanded 5-toothed limb. Branches of the style terminated by a very short obtuse cone. Achenia linear-fusiform or tetragonal, often somewhat compressed. Pappus of 2–5 lanceolate-awned scales or subulate awns, about the length of the corolla, or sometimes none!—Slender and somewhat pubescent annual (Californian) herbs; with opposite linear entire and sessile leaves, and solitary heads on slender peduncles, terminating the stem or branches. Flowers yellow: the anthers yellowish. anthers, or tipped !

§ 1. *Pappus awned; that of the ray similar but more slender.*—BURRIELIA proper.

* *Rays very short: appendages of the style acute: lobes of the disk-corolla glabrous.*

1. *B. microglossa* (DC.! l. c.): villous-pubescent; scales of the involucre and rays 3–4, the included ligules shorter than the styles; disk-flowers 6–12; achenia attenuated, minutely scabrous; pappus 2–4- (or the in rays 1-) awned.

California, *Douglas!*—Plant resembling a Pectis, 3–4 inches high; the heads appearing discoid. Leaves often an inch long, and a line wide.

* * *Rays obovate or oblong, exserted: lobes of the disk-corolla slightly barbellate.*

2. *B. tenerrima* (DC.! l. c.): stem simple, filiform, nearly glabrous; scales of the involucre and the obovate rays about 5; achenia slender, glabrous; pappus 1–3-awned.

California, *Douglas!*—Stem 3–4 inches high. Leaves filiform, half an inch long. Rays short.

3. *B. parviflora* (Nutt.): much branched, diffuse, almost glabrous; scales of the involucre and the oblong rays about 8; achenia minutely scabrous-canescent, linear-obconical; pappus 2–3-awned from a broad base.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 381.

St. Barbara, California, *Nuttall!*—Stems 2–3 inches high. Leaves nearly filiform, half an inch long, pubescent when young. Heads many-flowered, 2–3 lines long; involucre turbinate. Rays short. Scales of the pappus triangular-ovate, short, abruptly awned.

4. *B. gracilis* (DC.): appressed, pubescent or hairy; stem sparingly

or armed scales.

branched; scales of the involucre and the oval rays 10–14; achenia fusiform, compressed-4-sided, or those of the ray obcompressed; pappus of 4–5, or in the rays 2–3, lanceolate-subulate awns.—*DC.! prodr.* 5. *p.* 664; *Bartl. ind. sem. hort. Gœtt.* 1837, *& in Linnæa*, 12. *suppl. p.* 80; *Hook. & Arn. bot. Beechey, suppl. p.* 354; *Hook. bot. mag. t.* 3758. B. gracilis & B. longifolia, *Nutt. l. c.*

California, *Douglas! Nuttall!*—Plant 5–10 inches high, weak, decumbent. Leaves about 2 inches long, and a line wide, slightly fleshy. Expanded heads half an inch or more in diameter. Rays rather longer than the involucre.

§ 2. *Pappus none.*—BAERIA, Fisch. & Meyer.

or [illegible]

5. *B. chrysostoma:* appressed-pubescent or hairy; stems loosely branched; scales of the involucre and the elliptical rays 10–13, achenia glabrous.—Baeria chrysostoma, *Fisch. & Meyer! 2nd ind. sem. St. Petersb.* (*Dec.* 1835) *p.* 29; *Don, in Sweet, Brit. fl. gard. ser.* 2. *t.* 395; *DC. prodr.* 7. *p.* 254; *Hook. & Arn. bot. Beechey, suppl. p.* 354. Burrielia (Amphiachænia) hirsuta, *Nutt.! l. c.*

California, *Fischer & Meyer, Douglas! Nuttall!*—Plant 6–12 inches high, glabrous below. Leaves 1½ to 3 inches long, 1–2 or 3 lines wide, somewhat channelled above and connate at the base, as in the other species.—This and the preceding species are common in cultivation, and resemble each other so closely that they are apparently undistinguishable, except by the absence of the pappus in B. chrysostoma. As similar isomorphous species occur in Lasthenia, Hymenoxys, &c., we cannot consider the mere absence of the pappus as of generic consequence in this tribe. But since many botanists hold a different opinion, we think it inexpedient to increase the synonymy by employing the somewhat anterior name of Baeria for the whole genus. [illegible]

123. DICHÆTA. *Nutt. in trans. Amer. phil. soc. (ser. 2.) 7. p. 383.*

Heads many-flowered; the ray-flowers 5–12, ligulate, pistillate; those of the disk tubular, perfect. Scales of the somewhat campanulate involucre as many as the rays, nearly equal and in a single series, ovate, scarcely as long as the disk. Receptacle conical, alveolate; the alveoli toothed. Corolla of the disk with an inflated 5-lobed limb; the apex of the lobes and the slender tube minutely glandular-hairy. Branches of the style truncate, minutely barbellate at the apex. Achenia attenuate-obconical, 4-angular, somewhat hairy. Pappus of the ray and disk similar, composed of 4–8 oblong nerveless obtuse chaffy scales, (equalling the tube of the corolla,) which are fimbriate-laciniate at the apex, and 2 (rarely 3 or 4) subulate awns about the length of the corolla.—Annual small (Californian) herbs, growing in wet places and on the margin of ponds, villous-hairy when young, nearly glabrous when old; with opposite laciniate-pinnatifid leaves, or the upper linear and entire. Heads terminating the stem or branches. Flowers yellow.

This genus is, as it were, intermediate between Hymenoxys and Burrielia; D. tenella having exactly the habit of the latter, and D. uliginosa nearly that of Hymenoxys (Ptilopsis) mutica; which, moreover, presents a similar pappus, except that the intermediate awns are wanting.

1. *D. uliginosa* (Nutt.! l. c.): decumbent, branching; leaves crowded near the base, laciniate-pinnatifid; the lobes linear; the rachis broad: rays and scales of the involucre 8–12.

St. Barbara, California, *Nuttall!* April.—Plant 4–6 inches high, almost aquatic. Lower leaves 2–3 inches long. Heads one-third to half an inch in diameter, including the short oblong rays. Scales of the pappus often somewhat united; the awns slightly dilated below, minutely serrulate-scabrous.

2. *D. tenella* (Nutt.! l. c.): stem erect, simple, slender; leaves linear; the upper entire; the lower sparingly laciniate-pinnatifid towards the base; rays and scales of the involucre 5–8.

St. Barbara, California, growing with D. uliginosa, *Nuttall!* April.—Plant 3–4 inches high, resembling Burrielia gracilis. Stem and leaves hairy.

124. HYMENOXYS. *Cass. dict.* 55. *p.* 278; *DC. prodr.* 5. *p.* 661.

Heads many-flowered, discoid, or often radiate; the ray-flowers 8–10, ligulate, pistillate; those of the disk tubular, perfect. Scales of the involucre in 1–2 series, appressed, nearly the length of the disk. Receptacle conical, alveolate, mostly pilose or glandular. Corolla of the disk with a slender (sometimes minutely glandular) tube, and an expanded 5-toothed limb; the lobes glabrous, or slightly bearded. Branches of the style short, truncate and minutely barbellate at the apex. Achenia usually turbinate, and silky-villous. Pappus of 5–12 unequal chaffy acuminate or awned scales, minutely denticulate, mostly similar but often smaller in the ray (in § 2, awnless, or entirely wanting!).—Annual or sometimes perrennial? (South American, Mexican, and Californian) branching nearly glabrous and minutely glandular herbs, exhaling the odor of Chamomile, with rather small showy heads terminating the branchlets. Leaves alternate or opposite in the same plant, 1–2-pinnately parted into linear-filiform or almost capillary segments. Flowers yellow.

§ 1. *Heads radiate: scales of the pappus (at least in the disk-flowers) awned.* —OXYPAPPUS, DC. (Ptilomeris, *Nutt.*)

1. *H. Californica* (Hook.): achenia fusiform, minutely strigose; pappus of mostly 10 (8–12) small lanceolate or oblong denticulate-serrate scales; in the disk-flowers terminated with long awns a little shorter than the corolla; in the ray with 2–4 of the scales awned; the others awnless and smaller; scales of the involucre lanceolate; leaves mostly opposite; the divisions capillary; the rachis often broad towards the base.—*Hook. bot. mag. t.* 3828. Ptilomeris aristata, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 382.

β. coronaria: scales of the pappus of the ray small and acute, but all of them awnless; receptacle more hairy.—Ptilomeris coronaria, *Nutt.! l. c.*

St. Diego, California, *Nuttall!* April.—① Branched from the base, minutely glandular-puberulent. Scales of the involucre somewhat embracing the ray-achenia, which are a little incurved. Rays oblong, 2–3-toothed at the apex. Achenia linear-obconical or fusiform. Receptacle pilose.—This plant has been, we think, correctly referred by Hooker to Hymenoxys. The two following species have precisely the same aspect, foliage, involucre, &c., and can only be distinguished by the pappus.

§ 2. *Heads radiate: pappus awnless, or none!*—PTILOPSIS, Nutt. (Ptilomeris, *excl. spec*, & § Ptilopsis, *Nutt.*)

2. *H. mutica:* scales of the pappus 6–8, oblong, truncate or obtuse, laciniate at the summit, equal, shorter than the proper tube of the corolla; that of the ray smaller.—Ptilomeris mutica, *Nutt.! l. c.*
California, with the preceding, *Nuttall.*

3. *H. calva:* pappus of the ray and disk none.—Ptilomeris (Ptilopsis) anthemoides, *Nutt.! l. c.*
California, with the preceding, and in no way distinguishable, apparently, except by the achenium. *Nuttall!*

125. ACTINELLA. *Pers. syn.* 2. *p.* 469; *Nutt. gen.* 2. *p.* 173.

Actinea, *Juss.*—Ptilepida, *Raf.*—Picradenia, *Hook.*

Heads many-flowered; the ray-flowers 8–12, pistillate, ligulate, cuneate-oblong, 3-toothed or lobed at the apex; those of the disk tubular, perfect. Scales of the hemispherical involucre lanceolate or ovate, appressed, in 1–3 series, nearly equal, rather shorter than the disk. Receptacle hemispherical or conical, naked. Corolla of the disk cylindraceous, with the proper tube very short, 5-toothed; the teeth erect glandular-bearded. Branches of the style linear, truncate and barbellate at the apex. Achenia turbinate, short, densely silky-villous. Pappus of 5–12 ovate or ovate-lanceolate membranaceous 1-nerved and awned scales with denticulate or eroded margins.—Low chiefly perennial or suffruticose (American) plants; with the leaves linear or lanceolate, entire or 2–3-parted, impressed-punctate; the cauline alternate, sessile. Heads solitary, pedunculate. Flowers yellow, rarely white? sprinkled with bitter resinous globules.

* *Caulescent: stems numerous from a thick caudex: leaves sparingly pinnately parted.*

1. *A. Richardsonii* (Nutt.): puberulent; leaves petioled, rigid, irregularly 3–7-parted towards the summit; the segments glandular-punctate, filiform-linear, entire, or the terminal one 2-toothed; scales of the involucre ovate-lanceolate, in two series, the exterior united at the base; pappus of 5–7 ovate-lanceolate cuspidate-awned scales.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 379. Picradenia Richardsonii, *Hook.! fl. Bor.-Am.* 1. *p.* 317, *t.* 108; *DC. prodr.* 5. *p.* 665.
About Carlton House, on the Saskatchawan, *Richardson!*—A span high, rigid, branching above. Heads an inch in diameter, including the (8–10) obovate-oblong yellow rays. Branches of the style flat, truncate and bearded at the apex! Achenia clothed with long tawny villous hairs. Pappus shorter than the corolla of the disk.

* * *Cæspitose, mostly dwarf and acaulescent: leaves crowded or rosulate, usually entire: scapes simple, naked.*

2. *A. acaulis* (Nutt.): leaves densely clustered on the thick caudex, linear-spatulate, silky-villous, as well as the scapes when young, and the involucre; the scales of the latter lanceolate-oblong, in 2 series; scales of the

pappus 5–7, broadly ovate, tipped with slender awns.—*Nutt.! gen.* 2. *p.* 173, *& in trans. Amer. phil. soc. l. c.* Actinea acaulis, *Spreng. syst.* 3. *p.* 574; *Torr.! in ann. lyc. New York*, 2. *p.* 213. Galardia acaulis, *Pursh! fl.* 2. *p.* 743. Cephalophora (Actinella) acaulis, *DC. prodr.* 5. *p.* 663.

Dry chalky soil, along the upper part of the Missouri & Platte Rivers, *Bradbury, Nuttall! Dr. James!*—Plant growing in very dense tufts. Leaves 1–2 inches long, the silky pubescence dense and appressed. Scapes 3–6 inches long. Heads three-fourths of an inch in diameter, including the 10–12 cuneate-oblong yellow rays. Proper tube of the disk-corolla almost none. Receptacle hemispherical. Achenia very villous. Pappus nearly equalling the corolla of the disk.

3. *A. Torreyana* (Nutt.): densely cæspitose; scapes, involucre, and axils of the leaves very tomentose; leaves clustered, narrowly linear, obtuse, sparsely hairy, strongly punctate with blackish dots, usually as long as the scape; scales of the involucre oblong-ovate, with scarious margins, in about 2 series; scales of the pappus 5–7, ovate, nearly awnless.—*Nutt.! in trans. Amer. phil. soc. l. c.*, excl. syn.

Shelving rocks on the lofty hills or mountains of the Upper Platte called the "Three Butes," *Nuttall!* June.—Plant 2–3 inches high. Leaves a line wide, rigid. Heads rather smaller than in the preceding. Rays rather large, 8–10. Receptacle conical.

4. *A. lanata* (Nutt.! l. c.): densely cæspitose, very woolly throughout; leaves clustered, linear-oblanceolate, the primary oblong-spatulate and somewhat glabrous when old, nearly impunctate; scales of the involucre oblong-lanceolate, in about 3 series; the inner with scarious margins; scales of the pappus 5–6, ovate, tipped with short awns.—Actinea integrifolia, *Torr. in ann. lyc. New York, l. c.?* not of Kunth!

With the preceding, which it closely resembles, *Nuttall!* (Rocky Mountains in about lat. 41°, *Dr. James!*) June.—The specimen of A. integrifolia? *Torr. l. c.* is so imperfect that we cannot very confidently refer it to the present species; but it certainly is not the same with the foregoing.

5. *A. glabra* (Nutt.! l. c.): densely cæspitose; leaves narrowly linear or linear-spatulate, nearly glabrous when old, impressed punctate; the dilated scarious bases imbricated on the slender branches of the caudex; scape naked or with a single leaf; scales of the involucre ovate, obtuse, woolly, in about 2 series; scales of the pappus 5, oblong-ovate, lacerate-toothed, nearly awnless, scarcely more than half the length of the corolla.

Near the Shawnee villages on the Missouri, *Nuttall!* On the Platte? *Dr. James!*—Plant 3–5 inches high. Heads smaller than in A. acaulis. Pappus shorter than in any of the preceding species.

6. *A. scaposa* (Nutt.! l. c.): villous; stems leafless, strict, simple, bearing a single head; leaves radical, linear-lanceolate, attenuate at the base, entire, or some of them pinnatifid with a few acute lobes; exterior scales of the involucre obtuse, appressed, shorter than the disk; scales of the pappus oval, abruptly awned, a little shorter than the corolla. *DC.*—Cephalophora (Actinella) scaposa, *DC. prodr.* 5. *p.* 663.

β. linearis (Nutt.! l. c.): cinereous-pubescent, scarcely villous; scapes several from a slender branching caudex, on which the narrowly linear entire and punctate leaves are closely imbricated; scales of the involucre linear-oblong, in about 2 series, silky-villous; achenia sparsely villous.

Texas, in the eastern districts, *Berlandier. β.* Texas, *Dr. Riddell!*—The scapes, in the plant described by De Candolle, are 8–12 inches long; the leaves 2–3 inches in length and 2–3 lines in breadth, acute; the rays 4-nerved and 3-toothed. Our plant agrees with this description, except that the leaves are narrower, less hairy, &c.; and the involucre is nearly as long as the disk. The heads are rather larger than in the following species; the rays 12 or more, bright yellow, elliptical-oblong. The membranaceous scales of the pappus, 5 in number, are roundish-oval, obscurely 1-nerved, and very abruptly awned, the awns short; in the ray similar but awnless.

* * * *Annual: stems branching, diffuse: leaves entire.*

7. *A. linearifolia:* somewhat pubescent with slender spreading hairs; peduncles slender, terminating the spreading branches; leaves narrowly linear, the lowermost oblanceolate, attenuate at base; scales of the involucre oblong, obtuse, pubescent, in 1–2 series; scales of the pappus 5–6, ovate, entire, tipped with slender awns.—Hymenoxys? linearifolia, *Hook. ic. pl. t.* 146; *DC. prodr.* 7. *p.* 243.

Texas, *Drummond!* Western Louisiana or Arkansas, *Dr. Leavenworth!* —Plant slender, 6–12 inches high. Heads one-half to two-thirds of an inch in diameter, including the 8–9 rather large obovate-oblong rays, which are apparently pale yellow. Receptacle conical. Achenia villous. The heads exhale the odor of Chamomile when bruised, as in Hymenoxys. Although an annual, it is doubtless a congener of the preceding species.

126. AMBLYOLEPIS. *DC. prodr.* 5. *p.* 667.

Heads many-flowered, radiate; the ray-flowers ligulate, pistillate, in a single series, 3-cleft at the apex; those of the disk tubular, perfect. Scales of the involucre in two series; the exterior 6 or 7, ovate, acute, foliaceous, appressed, as long as the disk; the inner roundish-obovate, very obtuse, hyaline, nerveless. Receptacle flattish, alveolate. Corolla of the disk with a short tube and an inflated throat, 5-lobed; the lobes lanceolate, callous-apiculate. Anthers with long acute appendages. Branches of the style not appendiculate. Achenia turbinate, very villous with appressed hairs. Pappus of 5 very obtuse nerveless scales in a single series, as long as the tube of the corolla.—An annual erect and simple herb, sparingly hairy along the stem, the margins of the leaves, and the scales of the involucre. Leaves alternate, partly clasping, not decurrent, oval-lanceolate, nearly entire. Heads terminal, solitary, of the size and aspect of Pyrethrum Myconis. Flowers yellow. *DC.*

A. setigera (DC. l. c.) Rio Grande, [illegible], 1848,

Texas, between Bexar and Austin, *Berlandier.*—A foot high. Leaves few; the lower obtuse, the upper acuminate, *DC.*—We have seen this plant only in the herbarium of De Candolle.

127. HELENIUM. *Linn.; Lam. ill. t.* 688; *DC. prodr.* 5. *p.* 665.

Heads many-flowered, radiate; the ray-flowers in a single series, pistillate, ligulate, cuneiform, 3–5-cleft at the summit, nearly or quite destitute of a tube. Scales of the involucre in 2 series; the exterior linear or subulate, foliaceous, spreading or reflexed; the interior fewer and much shorter, chaffy. Receptacle convex, globose, or oblong, naked. Corolla of the disk with an extremely short proper tube, and a cylindraceous inflated 4–5-toothed throat;

the teeth very short and obtuse, glandular-bearded. Branches of the style slightly dilated and obtuse at the apex. Achenia obovate-turbinate, striate or ribbed, villous on the ribs. Pappus of 5–8 membranous apiculate or awned somewhat 1-nerved scales.—Erect branching (North American and Mexican) herbs; with alternate minutely punctate leaves, decurrent on the striate-angled stem and branches. Heads terminating the branches. Flowers yellow, or the rays (minutely pubescent beneath) rarely purplish-brown towards the base, and the corolla of the disk often brownish or purplish at the summit, sprinkled with bitter resinous globules.

§ 1. *Receptacle convex or globose: corolla of the disk mostly 5-toothed.*—Helenia, *Linn.*, *Gærtn.*

1. *H. autumnale* (Linn.): glabrous or minutely pubescent; leaves lanceolate, serrate, or the uppermost entire; acute, strongly decurrent; scales of the involucre linear-subulate; rays flat, 3–5-cleft at the apex, longer than the globose disk; scales of the pappus ovate or ovate-lanceolate, somewhat lacerate, acuminate-awned, about one-third or one-fourth the length of the corolla.—*Linn.! spec.* 2. *p.* 866; *Michx.! fl.* 2. *p.* 133; *Lam. ill. t.* 688; *Schkuhr, handb. t.* 250; *Pursh, fl.* 2. *p.* 560; *Ell. sk.* 2. *p.* 316; *Bart. fl. Amer. Sept. t.* 26; *Darlingt.! fl. Cest. p.* 487; *Hook. bot. mag. t.* 2994. & *fl. Bor.-Am.* 1. *p.* 317; *DC.! prodr.* 5. *p.* 666. H. pubescens, *Ait. Kew.* (*ed.* 1) 3. *p.* 287.

β. *grandiflorum:* scales of the pappus narrower and more awned, one-third to two-thirds the length of the corolla (rays not tubular).—H. autumnale, *Hook.! l. c.*, partly. H. grandiflorum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 384. H. montanum, *Nutt.! l. c.*

γ. *tubuliflorum:* scales of the pappus lanceolate, acuminate-awned, half the length of the corolla; rays tubulose, unequally 5-cleft.—H. tubuliflorum, *DC.! l. c.*—Probably an accidental state of var. β.; as some of the rays are flat and not at all tubular in an authentic specimen.

δ. *canaliculatum:* scales of the pappus ovate, either acutish, acuminate, or slightly awned, about one-fourth the length of the corolla: rays concave-canaliculate or 3-sulcate.—H. canaliculatum, *Lam. in jour. hist. nat.* 2. *p.* 213, *t.* 35?

In wet or alluvial soil, nearly throughout North America, from Florida and Georgia! to Hudson's Bay! Subarctic America! and west to Oregon! Aug.–Oct.—♃ Stem 1–3 feet high, loosely corymbose-paniculate at the summit. Leaves &c. bitter, as in all the species of the genus. Rays drooping. Disk one-third to two-thirds of an inch in diameter, greenish-yellow. Achenia hairy or villous on the angles.—Some of our varieties are possibly species; but they accord in every thing but the pappus, which also presents every intermediate gradation. The var. β. is the only state we have seen from Oregon, Saskatchawan, &c.: but a state with a nearly similar pappus is common in New York; while other specimens, otherwise undistinguishable, present a reduced and merely acute pappus.—*Sneeze-weed.*

2. *H. parviflorum* (Nutt.): glabrous; stem much branched, slightly angular; leaves lanceolate or oblong-lanceolate, here and there subserrulate, scarcely decurrent; scales of the involucre filiform, shorter than the globose disk; rays flat 3-toothed, narrow; achenia rather smooth; pappus awned, half the length of the corolla; heads scattered, solitary or in pairs. *Nutt.! in trans. Amer. phil. soc. l. c.*

"Georgia.—A very distinct and well-marked species, scarcely at all bitter to the taste. Flowers scattered, not fastigiate, scarcely half the size of those of H. autumnale, to which this species has an affinity; the leaves are also generally entire and scarcely decurrent. Rays slightly pubescent externally." *Nuttall.*—We have only seen cultivated specimens: in these the ribs of the achenium are villous with long scattered hairs.

3. *H. tenuifolium* (Nutt.): fastigiately much branched, nearly glabrous; leaves crowded and usually fascicled, very narrowly linear, entire; scales of the involucre subulate; rays rather longer than the globose disk: scales of the pappus ovate, entire, crowned with abrupt awns, nearly equalling the corolla.—*Nutt.! in jour. acad. Philad.* 7. *p.* 66; *Hook.! compan. to bot. mag.* 1. *p.* 98.

Fields and road-sides, Mississippi! Louisiana! and Arkansas! "A common and troublesome weed, imparting a bitter taste to the milk of cows that feed upon it." *Dr. Hale!* April–Nov.—♃ Plant 8–20 inches high, very leafy. Disk 3–4 lines in diameter, yellow. Achenia villous.

§ 2. *Receptacle oblong or conical: corolla of the disk mostly 4-toothed.*—Tetrodus, *Cass.*

4. *H. puberulum* (DC.): minutely cinereous-puberulent; leaves oblong-lanceolate, entire; the upper acute or acuminate; the lower obtuse, sometimes incised; heads terminating the simple naked branches; rays and involucre very short; disk globose; scales of the pappus ovate, cuspidate-acuminate, somewhat denticulate or lacerate, rather shorter than the achenia. —*DC. prodr.* 5. *p.* 667. H. pubescens, *Hook. & Arn. bot. Beechey, p.* 149, *& suppl. p.* 355; not of *Ait.* H. Californicum, *Link, ind. sem. hort. Berol.* 1840? Cephalophora decurrens, *Less. in Linnæa,* 6. *p.* 517; *DC. l. c. p.* 663.

California, *Chamisso, Douglas!* &c.—① ? A larger plant than H. quadridentatum, sprinkled with resinous globules; the disk nearly half an inch in diameter. Corolla of the disk brownish-purple at the tips. Rays yellow, pubescent. Achenia villous on the ribs; the pubescence and the pappus tawny.

5. *H. quadridentatum* (Labill.): somewhat glabrous, much branched; radical and lower leaves oblong-pinnatifid; the upper coarsely 1–2-toothed on each side; the uppermost lanceolate, entire; involucre and rays shorter than the ovoid-oblong disk; scales of the very short pappus roundish-oval, obtuse.—*Labill. in act. soc. nat. hist. Par.* 1. *p.* 22, *t.* 4; *Lam. ill. t.* 688; *Bot. reg. t.* 598; *Pursh, fl.* 2. *p.* 560; *DC.! prodr.* 5. *p.* 666. Rudbeckia alata, *Jacq. ic. rar.* 3. *t.* 593.

Moist soil and banks of rivers, Louisiana! Mississippi! and Arkansas! common. June–Aug.—① Plant 1–3 feet high; the stems and branches broadly winged. Heads small: the disk yellow. Achenia minutely pubescent.

6. *H. microcephalum* (DC.): glabrous [or minutely puberulent]; stem erect, very much branched, bearing many heads; leaves lanceolate, entire, somewhat punctate; involucre very short; rays 3-toothed (yellow) glabrous; pappus very short, obtuse. *DC. prodr.* 5. *p.* 667.

β. bicolor: rays purplish-brown towards the base, yellow at the apex; leaves manifestly punctate.—H. elegans, *DC. l. c.?*

Texas? between Lando and Bexar, *Berlandier.* (Heads subrotund, 3 lines in diameter, *DC.*) Texas or Arkansas, *Mr. Beyrich!* (*Dr. Leavenworth.*) *β.* Texas, *Drummond!*—Plant 2–4 feet high; the minutely puberulent branches bearing numerous corymbose heads; the globose disk 3 lines in diameter. Rays much longer than the subulate scales of the involucre, about the length of the disk, glabrous or nearly so; the receptacle depressed-conical. Corolla of the disk brownish-purple at the apex. Achenia minutely pubescent. Lower leaves oblong, triplinerved, tapering to the base; the upper lanceolate-linear, strongly decurrent.

H. Mexicanum (H. B. & K.) is said by Nuttall (*in trans. Amer. phil. soc. l. c.*) to have been collected in Louisiana by Mr. Teinturier. We have seen no specimens which accord with the Mexican plant.

H. longifolium (Smith): leaves linear-lanceolate, entire, very smooth; peduncles naked, elongated. *Smith in Rees, cycl.* H. autumnale, *Mill. dict. ed.* 8, ex *Smith.*

H. pumilum of Willd. (*Enum. suppl. p.* 60,) of unknown origin, is at present not known either in the Berlin Garden or in the herbarium of Willdenow.

H. quadripartitum (Link, enum. 2. p. 338) is probably a state of H. quadridentatum.

H. altissimum of Link, is described in the Index Seminum of the Berlin Garden for 1840 (fide *Linnæa*, 15. *suppl. p.* 83) from a plant raised from seeds sent by Dr. Engelmann of St. Louis: we have not seen the description.

H. commutatum, Link, l. c. is also said to be a new species from North America.

128. LEPTOPODA. *Nutt. gen.* 2. *p.* 174; *Ell. sk.* 2. *p.* 445.

Heads many-flowered, radiate; the ray-flowers in one or more series, ligulate, cuneiform, 3–4-cleft at the summit, nearly or quite destitute of tube, neutral. Scales of the involucre in 1–2 series, spreading or reflexed; the exterior numerous, foliaceous, lanceolate-subulate; the inner very short, chaffy. Receptacle conical or hemispherical, naked, areolate; the areolæ becoming fleshy. Corolla with a short narrow tube, and an elongated cylindraceous 4–5-toothed throat; the teeth short and obtuse, glandular-bearded. Branches of the style short, slightly dilated and truncate at the apex. Achenia short, truncate at each end, somewhat cylindrical or turbinate, many-striate. Pappus of 6–12 (rarely 5) membranous and silvery oblong (mostly nerveless and awnless) scales, denticulate, lacerate, or fimbriate, longer than the achenia.—Perennial (North American) herbs, with the habit &c. of Helenium; but usually with simple fistulous stems, naked above, and terminated by a solitary large head. Flowers of the ray and disk yellow or sometimes brownish-purple, sprinkled with resinous globules; the former mostly pubescent externally.

The first section of the genus is somewhat peculiar in habit: the second is only to be distinguished from Helenium by its neutral rays.

§ 1. *Stems mostly simple, naked at the summit, and terminated by a single large head: rays numerous* (12–40), *spreading: pappus awnless: peduncle commonly dilated or obconical under the head.*—LEPTOPODA proper.

* *Achenia glabrous, glandular-dotted: scales of the pappus slightly thickened or obscurely nerved at the base.*

1. *L. Helenium* (Nutt.): glabrous, or when young sometimes pubescent at the summit; leaves lanceolate or linear-lanceolate, elongated, entire, or often denticulate, mostly decurrent; the radical and lowermost tapering into

petioles; scales of the pappus lacerate, especially near the summit, often somewhat pointed with a central bristle; rays 20–30 in a single series.—*Nutt. gen.* 2. *p.* 174; *DC. l. c.* L. Helenium & denticulata, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 373. L. decurrens, *Macbride, in Ell. l. c.*

South Carolina! and Georgia! to Florida! Alabama! and Louisiana! in wet soil, like all the species. March–April.—Stem 1–2 feet high. Lower cauline leaves 4–7 inches long, 1-nerved; the primordial small. Heads an inch and a half in diameter, including the rays.

2. *L. incisa:* glabrous; leaves lanceolate, rather obtuse, sessile, not decurrent, sinuate-pinnatifid or incised; scales of the pappus lacerate or slightly fimbriate at the summit; rays about 40 (always?) in a double or triple series.

Georgia, *Mr. L. Le Conte!*—Plant with the habit of L. puberula, and with the incised or pinnatifid leaves so common in that species; but the achenia perfectly glabrous, strongly striate; the pappus nearly as in L. Helenium. Involucre glabrous, very short. The rays in the only specimen we possess are in 2 or more series.

* * *Achenia hairy on the angles: pappus nerveless.*

3. *L. fimbriata:* glabrous or nearly so; leaves lanceolate or linear-lanceolate, acute, entire or remotely denticulate, often decurrent; the lower elongated; the radical oblanceolate; scales of the pappus deeply fimbriate-cleft into capillary segments.—Galardia fimbriata, *Michx. fl.* 2. *p.* 142?

East Florida, *Dr. Leavenworth!* Texas, *Drummond! Dr. Leavenworth!* growing in wet soil, and in pine barrens along streams, like all the other species. April–May.—Stem occasionally forked above, 1–2 feet high. Leaves resembling those of L. Helenium. Rays rather numerous, in a single series. Receptacle oblong-conical. The scales of the silvery pappus are fully half the length of the corolla, and beautifully dissected about to the middle into a capillary fringe.—This is very probably not the Galardia fimbriata of Michaux, although it best accords with his character; but, since that name cannot properly be employed for either of the species already described, it may in any case be adopted for the present very distinct species, for which it is very appropriate.

4. *L. puberula* (Macbride): stem tomentose-pubescent and somewhat viscid; leaves linear-lanceolate (thickish), often toothed; the cauline not decurrent; the radical sometimes obovate-lanceolate, often incised; scales of the pappus obtuse, lacerate-denticulate at the summit, or nearly entire.—*Macbride, in Ell. sk.* 2. *p.* 445, (excl. syn. (*Michx?*); *DC. l. c.* Helenium vernale, *Walt.*, fide *Ell.*

β. *pinnatifida:* radical and lower cauline leaves incisely toothed or pinnatifid.—L. pinnatifida, *Schwein.! herb.; Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 372.

North Carolina! to Georgia! and Florida! April–May.—Stem 1–2 feet high, usually fistulous. Head, including the 20–30 rays, often 2 inches in diameter.

5. *L. brevifolia* (Nutt.): stem glabrous below, minutely pubescent at the summit; leaves all entire or obscurely denticulate; the lower and radical oblong-spatulate, obtuse; the cauline more or less decurrent; the uppermost lanceolate, often acute; scales of the pappus obtuse, slightly denticulate or lacerate at the summit.—L. puberula, *Ell. l. c.*, partly.

β. stem stouter and taller; leaves larger; the cauline more strongly decurrent.—L. integrifolia, *M. A. Curtis! mss.*

North Carolina! to Alabama! common. β. Raleigh, N. Carolina, *Mr. Curtis!* May–June.—Stem 1–3 feet high, not unfrequently slightly branched at the summit, bearing 2 or 3 heads. Primordial radical leaves often sessile, 1–2 inches long; the succeeding sometimes larger; the upper cauline also small: but in var. β. all are larger. Heads 12–18 lines in diameter, including the numerous (12–25) rays. Disk-flowers brown at the summit, or often pale.

§ 2. *Stem leafy, corymbose at the summit; the heads on short peduncles: rays 8–12, drooping (very rarely furnished with an abortive style or with sterile filaments).*—PSEUDO-HELENIUM.

6. *L. brachypoda:* minutely pubescent, or glabrous below; stem fastigiate-corymbose at the summit; leaves decurrent, lanceolate or oblong-lanceolate, entire or denticulate; the upper acute; scales of the involucre linear-lanceolate, shorter than the globose brownish-purple disk, about half the length of the golden yellow rays; scales of the pappus ovate, somewhat denticulate, mucronate or abruptly cuspidate-awned: achenia hairy on the angles.—Helenium quadridentatum, *Hook.! compan. to bot. mag.* 1. *p.* 98; *Croom! cat. pl. New Bern. p.* 44; not of *Labill. &c.* H. nudiflorum & H. micranthum, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 385.

β. rays dark orange or brownish-purple.—H. purpureum, *Hale! mss.*

Damp soil, North Carolina! to Georgia! and Florida! and from Illinois! to Louisiana! Arkansas! and Texas! apparently common. April–July.—Plant 1–3 feet high, commonly slender and simple below, often much branched; the radical leaves often toothed. Disk 4–6 lines in diameter. Receptacle ovoid. Rays irregularly and often deeply cleft, one-half to three-fourths of an inch long. Corolla of the disk 4–5-toothed. Pappus sometimes scarcely pointed, but mostly tipped with a mucronate point or short awn.—The variety with brown-purple rays is apparently confined to the South-Western States, and is not constant. The rays are entirely sterile; but in one or two instances we have observed an abortive style in a portion of the rays, while the others were neutral. The aspect of this somewhat variable plant is entirely that of Helenium: but as the sterile rays afford the only available character of Leptopoda, we are obliged to retain it in the latter genus.

Div. 2. BALDWINIEÆ.—Receptacle very deeply alveolate; the cartilaginous alveoli consisting of united chaff? enclosing the achenia. Rays neutral.

129. BALDWINIA. (Baldwina,) *Nutt. gen.* 2. *p.* 175 (partly); *Ell. sk.*

Heads (subglobose in fruit) many-flowered; the ray-flowers 20–30, ligulate, neutral, in a single series; those of the disk tubular, perfect. Involucre campanulate, scarcely as long as the disk; the scales imbricated in about 4 series, short and thick, appressed, or at length somewhat squarrose; the innermost longest, mucronate-acuminate. Proper receptacle convex-conical, covered with cartilaginous chaff entirely concreted, and forming 5–6-angular cells or deep alveoli, the margins nearly truncate and entire. Rays narrowly cuneiform-oblong, 3-toothed at the apex. Corolla of the disk with a short corneous tube, and a cylindrical 5-toothed limb; the teeth glandular-puberulent. Branches of the style flattish, crowned with a ring or tuft of collecting hairs, and terminated by a subulate cone. Achenia immersed in the cells, cylindrical-obconical, silky-villous. Pappus of 7–9 lanceolate-oblong nerveless erect chaffy scales in a single series, as long as the corneous tube of the corolla, and about the length of the achenium.—A perennial puberulent herb, with a simple or rarely somewhat branched striate stem, naked at the summit. Leaves alternate, rather thick, minutely punctate, short, linear-spatulate, sessile, entire. Head large, solitary. Corolla of the disk and ray yellow, punctate with resinous dots. Anthers yellowish-white.

B. uniflora (Nutt.! l. c.)—*Ell. sk.* 2. *p.* 147; *DC.! prodr.* 5. *p.* 653. Ceranthea, *Le Conte! mss.*

Margin of swamps, Virginia, near the coast, S. Carolina! Georgia! Florida! and Covington, Louisiana! July–Sept.—Stem about 2 feet high. Leaves obscurely 1-nerved. Head, including the rays, nearly 2 inches in diameter; the exterior involucral scales oval, obtuse. Receptacle resembling honey-comb; the cells 4 lines in depth, including the (not stipitate) achenia and pappus.—The remarkable genus Baldwinia (as it should be written) was named in commemoration of the late Dr. Wm. Baldwin; a botanist of distinguished talents and indefatigable zeal, in whose early death natural science in this country sustained a severe loss. The genus may well be restricted to the present species, as proposed by Elliott; who, however, probably mistook the appressed silky hairs at the summit of the achenium for a fimbriate exterior pappus.

130. ACTINOSPERMUM. *Ell. sk.* 2. *p.* 448, under Baldwinia.

Heads (hemispherical in fruit) many-flowered; the ray-flowers 8–10, ligulate, neutral; those of the disk tubular, perfect. Involucre much shorter than the disk; the scales imbricated in about 2 series, lanceolate, somewhat foliaceous, squarrose; the interior mucronate-acute. Proper receptacle small, covered with cartilaginous subulate-cuspidate chaff, concreted and forming somewhat hexangular cells, in which the achenia and pappus are deeply immersed. Rays narrowly cuneiform, elongated, 3-toothed at the apex. Corolla of the disk with a somewhat expanded deeply 5-toothed limb (the teeth glandular-puberulent), becoming indurated at the very base; the proper tube almost none. Style &c. as in Baldwinia. Achenia turbinate, silky, stipitate, flat and 12-radiate at the summit, and crowned with a short cup-shaped pappus of about 12 orbicular-obovate nerveless scales, which are slightly thickened at the base.—An annual or biennial? slender corymbosely much branched herb, glabrous, or when young often hirsute with scattered jointed hairs; the slender branches naked at the summit, and terminated by small but showy heads, with somewhat the aspect of a Coreopsis; the bright yellow rays 3–4 times the length of the involucre. Disk-corolla and anthers yellow, sprinkled with resinous globules. Leaves very numerous, alternate or irregularly scattered, often much crowded, narrowly linear, obtuse, tapering to the base, sessile, thickish, impressed-punctate, nerveless.

A. angustifolium.—Buphthalmum angustifolium, *Banks! herb.; Pursh! fl.* 2. *p.* 564. Baldwina multiflora, *Nutt.! gen.* 2. *p.* 176; *Ell.! l. c.; DC. prodr.* 5. *p.* 653.

Sand hills of Georgia and Florida, *Bartram! Baldwin! Mr. L. Le Conte! Dr. Chapman! Dr. Leavenworth!* Aug.–Sept.—Stem 1–3 feet high.

Leaves less than a line wide, often almost filiform; those of the branchlets scattered. Rays 6–9 lines long. Cells of the receptacle deeper in proportion than in Baldwinia; the immersed achenia exhibiting nothing but their radiated summits nestling in the cavities, and resembling some of the starry Madrepores, as Elliott remarks. The minute chaffy scales of the pappus are inserted by a narrow thickened base, and spread, like the petals of a rosaceous flower, from the flat summit of the exactly turbinate achenium.

Div. 3. GALINSOGEÆ, *DC.*—Receptacle chaffy throughout; the chaff distinct. Scales of the involucre not enclosing the ray-achenia. Rays fertile or neutral, or none.

Galinsoga parviflora, Cav. is somewhat naturalized near Boston, having doubtless escaped from the Botanic Garden at Cambridge, as it has done from several European gardens: we have also found it in a waste field near Princeton, New Jersey.

131. MARSHALLIA. *Schreb. gen.* 2. *p.* 810; *Cass.*; *DC. prodr.* 5. *p.* 680.

Persoonia, *Michx.*—Trattenickia, *Pers.*—Therolepta, *Raf.*

Head many-flowered; the flowers all tubular and similar, perfect. Scales of the involucre linear-lanceolate, foliaceous, in 1–2 series, erect, about the length of the disk. Chaff of the convex or conical ~~involucre~~ narrowly linear, rigid or herbaceous. Corolla pubescent, with a filiform tube and a 5-parted (occasionally somewhat bilabiate) limb; the lobes long and linear, spreading. Branches of the style slender, slightly pubescent, truncate at the apex. Achenia turbinate, somewhat 5-angled, mostly hairy or villous. Pappus of 5 or 6 ovate or triangular-lanceolate acute or acuminate nerveless membranaceous scales.—Perennial (North American) herbs; with alternate entire and glabrous 3-nerved leaves (the lower more or less petioled and sheathing at the base), and solitary heads (resembling those of Scabiosa) terminating the simple stem or branches. Flowers pale purple or rose-color; the anthers blue.

1. *M. latifolia* (Pursh): stem simple or sparingly branched above, leafy; leaves ovate-lanceolate, acuminate, sessile, 3-nerved; scales of the involucre linear-lanceolate, acute, rigid; chaff subulate-filiform; achenia glabrous when mature; scales of the pappus attenuate-acuminate from a lanceolate-triangular base.—*Pursh! fl.* 2. *p.* 519; *Nutt. gen.* 2. *p.* 140; *Ell. sk.* 2. *p.* 316; *DC. l. c.* M. Schreberi, *Tratt. arch. gen.* 1. *p.* 108, with a figure copied from that of *Michaux*. Athanasia trinervia, *Walt.! Car. p.* 201. Persoonia latifolia, *Michx.! fl.* 2. *p.* 105, *t.* 43. Trattenickia latifolia, *Pers. syn.* 2. *p.* 403.
Dry soil, Virginia! to Alabama! along or near the mountains. May–June.—A foot high, glabrous. Leaves about 2 inches long, and three-fourths to one inch broad. Pappus tawny.

2. *M. angustifolia* (Pursh, l. c.): stems somewhat cæspitose, often branching above, leafy; radical leaves narrowly lanceolate, acute, 3-nerved; the upper cauline linear, very narrow; scales of the involucre linear-lanceolate, acute, rigid; chaff filiform-setaceous; achenia minutely hairy on the angles; scales of the pappus ovate-lanceolate, acuminate.—*Ell. sk.* 2. *p.* 316 (& var. cyananthera); *DC.! l. c.* Persoonia angustifolia, *Michx.! l. c.* Trattenickia angustifolia, *Pers. l. c.* Athanasia graminifolia, *Walt.! Car. p.* 201.

Pine woods, &c., North Carolina! to Florida! Tennessee, and Western Louisiana! June–Aug.—A foot high, somewhat pubescent at the summit. Lowest leaves 3–6 inches long, petioled; the uppermost linear-setaceous; all rigid. Involucre shorter than the disk. Scales of the pappus somewhat denticulate, very obscurely 1-nerved.

3. *M. lanceolata* (Pursh! l. c.): stem simple, very leafy near the base, naked above; leaves lanceolate or oblanceolate, mostly obtuse, triplinerved, tapering into petioles, the upper sessile; scales of the involucre oblong-linear, obtuse; chaff linear and somewhat dilated at the apex; achenia pubescent; scales of the pappus ovate, acuminate.—*Ell. sk.* 2. *p.* 315; *DC.! l. c.* Persoonia lanceolata, *Michx.! l. c.* Trattenickia lanceolata, *Pers. l. c.* Athanasia obovata, *Walt.! l. c.*

Upper districts of North Carolina! to Middle Florida! April–June.—Stems 10–20 inches high, a little pubescent near the summit. Pappus tawny, somewhat denticulate, cuspidate-acuminate.

4. *M. cæspitosa* (Nutt.): stems mostly simple, cæspitose, leafy only at the base; leaves lanceolate-linear, rather obtuse, obscurely 1–3-nerved, somewhat petioled; scales of the involucre oblong-linear, obtuse; chaff linear and somewhat dilated at the apex; achenia villous (at least on the nerves); scales of the pappus ovate, scarcely acute.—*Nutt.! in DC. prodr.* 5. *p.* 680; *Hook. bot. mag. t.* 3704.

Woods and moist prairies, Arkansas & Western Louisiana, *Nuttall! Dr. Leavenworth! Dr. Hale! Dr. Engelmann!* Texas, *Drummond!* May–June.—Plant 6–10 inches high, with much the aspect of an Armeria; the leaves (2–3 inches long, & 2–3 lines wide) all crowded at the base of the simple scape-like stem. Pappus conspicuous, tawny; the scales so broad as to overlap, often lacerate-denticulate near the summit, not pointed.

132. BLEPHARIPAPPUS. *Hook. fl. Bor.-Am.* 1. *p.* 316. (excl. spec.)

Ptilonella, *Nutt.*

Heads few-flowered; the ray-flowers about 3, ligulate, short, dilated cuneiform, 3–5-lobed, pistillate, and sometimes with rudimentary stamens; those of the disk (7–9) tubular, perfect; the central ones infertile. Scales of the involucre 6–8, in a single series, oblong, equal, concave, with somewhat involute membranaceous margins. Receptacle small, furnished with a marginal series of membranaceous chaff, partly embracing the fertile disk-flowers. Corolla of the disk glabrous, with a short tube and an expanded throat, 5-toothed. Style in the disk-flowers hairy and slightly thickened above the middle; the branches extremely short and obtuse, thick, glabrous, not appendiculate, the stigmatic lines confluent at the summit! Achenia obconical or clavate, villous. Pappus of 12 to 20 membranous pectinate-plumose narrow scales, shorter than the corolla.—An annual slender (aromatic) plant; with nearly glabrous diffusely branched and corymbose stems, narrowly linear entire and scabrous alternate and crowded leaves, and small heads terminating the branchlets: the involucre, branchlets, and upper leaves glandular-viscid. Rays and disk-flowers white: anthers brownish-purple.

B. scaber (Hook. l. c.)—*DC. prodr.* 5. *p.* 679. Ptilonella scabra, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 386.

Prairies and sandy plains of Oregon, east of Wallawallah, *Douglas! Nuttall!*—About a foot high. Cauline leaves an inch long, half a line wide.

Heads 3 lines long. Rays scarcely longer than the disk, sometimes palmate and furnished with stamens: the branches of the style linear.—The style of the disk-flowers is very peculiar, and more like that of the Cynareæ than of the present tribe.—De Candolle's character of Blepharipappus, made by combining the description of Hooker's two species, is consequently inapplicable to either. The division of the genus was proposed by Arnott, in the second edition of Lindley's Introduction to the Natural System, and also in the Supplement to Capt. Beechey's Voyage (p. 358); retaining the name for the present species.

Div. 4. Madieæ, *DC.*—Receptacle chaffy throughout, or only at the margin; the chaff often more or less united. Scales of the involucre convolute or complicate and enclosing the (fertile) achenia of the ray, which are always destitute of pappus. (Natives of Chili, California, and Oregon.)

133. ACHYRACHÆNA. *Schauer, del. sem. Vratis,* 1837; *DC. l. c.*

Head many-flowered; the ray-flowers sterile, small, somewhat ligulate, or cleft on one side, retaining the rudiments of stamens and style; those of the disk perfect, 5-cleft. Scales of the involucre in a double series, lanceolate; the exterior foliaceous, somewhat convolute and including the ray-flowers; the inner plane, with scarious margins. Receptacle flat, bearing a series of chaffy scales between the ray and disk; otherwise naked, alveolate and somewhat fimbrillate. Anthers not caudate; the antheriferous joint rather long. Branches of the style nearly terete, puberulent. Achenia elongated, attenuate at the base, longitudinally striate, scabrous along the nerves; in the ray destitute of pappus; in the disk crowned with an ample pappus of 10 membranaceous obtuse scales in 2 series; the 5 exterior scarcely half the length of the inner; the latter when young convolute around the tube of the corolla.—A villous herb [annual], with somewhat the habit of Hecubæa or Scorzonera, rather canescent; some of the hairs long, others very short and perhaps glandular. Stem nearly simple, naked at the summit and bearing a single head. Leaves alternate, linear, sessile, entire. Corolla with a long tube, in the dried specimens purple. *DC.*

A. mollis (Schauer, l. c.)—*Linnæa,* 12. *suppl. p.* 87; *DC. prodr.* 7. *p.* 292. Lepidostephanus madioides, *Bartl. ind. sem. hort. Gætt.* 1837, *& in Linnæa, l. c. p.* 82, *&* 15. *p.* 94.
Western coast of North America, probably from California, *Douglas.* Described by De Candolle apparently from the wild plant, in 1838; but the genus founded the year preceding, both by Schauer and Bartling, on specimens cultivated in the Botanic Gardens of Breslau and Gœttingen. According to Schauer, the scales of the involucre are in a single series, as many as the short 3-toothed rays (5–10), and the somewhat foliaceous chaff in 2 series: the inner scales of the white and scarious pappus linear, obtuse, slightly fimbriate at the apex, as long as the flowers: the stems somewhat branched: the oblong 20–30-flowered heads almost an inch long. According to Bartling, the head is about half an inch long; the rays 3–5, at first yellow, at length fuscous; the pappus shining, denticulate under a lens. The genus would appear to rank next to Chænactis, except that the rays are destitute of pappus, and the receptacle chaffy at the margin.

⁂ We would here observe, that, since the preceding page was printed, wild specimens of the well-marked ACHYRACHÆNA (California, *Douglas!*) have fallen under our observation; we having casually misplaced them, as De Candolle had done, in Cichoraceæ, with specimens of Calais.

134. LAYIA. *Hook. & Arn. bot. Beechey, p.* 148 (1833), *&* 357; not of *p.* 182.

Eriopappus, *Arn.* (1836)—Madaroglossa, *DC.* (1836)—Blepharipappus, partly, *Hook.*

Heads many-flowered; the ray-flowers 10–15, ligulate, 2–3-toothed or cleft, pistillate; those of the disk tubular, perfect. Scales of the involucre oblong or lanceolate, acute, equal, in a single series, foliaceous above; the base convolute and enclosing the ray-achenia. Receptacle flat, pubescent, chaffy at the margin; the chaff in a single series between the ray and disk-flowers, and resembling an inner row of involucral scales; or rarely in 2–3 series. Corolla of the disk with a short proper tube and an infundibuliform throat, 5-toothed; the teeth and the tube sparsely hairy. Branches of the style in the disk-flowers filiform, very acute, hairy above, at length exserted and recurved. Achenia of the ray glabrous, linear-oblong, attenuate at the base, or subclavate, more or less obcompressed, somewhat incurved, crowned with a small protuberant disk, destitute of pappus; of the disk linear-clavate, angled, appressed-pubescent or villous, with a pappus of 10–20 equal bristly or subulate awns, which are naked and scabrous-serrulate above, and plumose or villous with very long weak hairs towards the base.—Annual or biennial pubescent or hirsute and often glandular herbs (natives of California and Oregon); with showy heads terminating the branches, and alternate sessile linear or oblong leaves; the upper usually entire, and the lowermost incisely toothed or pinnatifid. Rays yellow or white; the disk-flowers yellow. Anthers brownish or purplish.

Under the name of Layia, this genus was proposed by Hooker & Arnott several years anterior to Madaroglossa, *DC.*; but the authors themselves seem to have forgotten it, as they some time afterwards applied this name to a Chinese Leguminous plant; which however proves to be the Macrotropis of De Candolle. In the supplement to Capt. Beechey's Voyage, *Layia* is continued for the present genus; while, by some inadvertency, these authors also state (in a note on p. 357) that they retain the name for the Leguminous plant.

§ 1. *Rays yellow.*—Madaroglossa, *DC.*

1. *L. gaillardioides* (Hook. & Arn.): decumbent, hispid throughout with rather rigid spreading bristles; leaves oblong-lanceolate; the lower incisely serrate, the upper entire; the flower-branches somewhat elongated; rays 12–15, obovate, 3-cleft at the apex, twice the length of the disk; pappus fulvous. *Hook. & Arn. bot. Beechey, p.* 148 (under Tridax? galardioides), *& suppl. p.* 357.

Monterey, California, *Mr. Lay;* the Naturalist of Capt. Beechey's voyage.—This species (which we have not seen) appears to differ from the others in the more copious linear-oblong chaff of the receptacle, occupying more than one series.

2. *L. hieracioides* (Hook. & Arn. l. c.): hispid throughout with spreading rigid bristles; leaves oblong-lanceolate, coarsely incised-serrate; those of the

flower-branches linear and entire; rays about 15, entire, oval-oblong, a little longer than the disk; pappus fuscous. *DC.*—Madaroglossa hieracioides, *DC. l. c.*

California, *Douglas.*—Plant a foot high, with the habit of an Echium; the bristles arising from a black base. Leaves 2 inches long, 6–7 lines broad. Achenia of the disk a little villous: awns of the pappus villous at the base. *DC.*

3. *L. carnosa* (Nutt.): stem decumbent, hairy towards the summit; leaves succulent, smooth, linear-oblong, incisely toothed; head subsessile, solitary; scales of the involucre linear, obtuse, softly pubescent; rays very small, 2–3-toothed; achenia of the ray and disk pubescent; pappus of 18–20 loosely plumose awns.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 393, under Madaroglossa.

St. Diego, California, *Nuttall!* on the sands of the sea-coast. May.—Plant 3–4 inches high. Lower leaves oblong-spatulate, the coarse teeth obtuse. Rays scarcely if at all exserted. Pappus as long as the corolla of the disk, whitish.

4. *L. elegans* (Nutt.): stem decumbent, somewhat hirsute, much branched from the base; leaves sparsely hispid, linear-lanceolate; the radical pinnatifid; the cauline laciniate-toothed towards the apex, the uppermost entire; peduncles and involucre somewhat villous and glandular; rays 10–12, 3–4-toothed, longer than the disk; pappus white.—*Nutt.! l. c.*, under Madaroglossa.

St. Barbara, California, *Nuttall!*—Awns of the pappus more densely plumose towards the base than in L. heterotricha, the long and very fine woolly hairs crisped and interlaced; and the yellow rays are smaller than in that species. It appears to differ from L. hieracioides by its larger deeply toothed rays, very woolly white pappus, &c.

§ 2. *Rays white, or nearly so.*—Eriopappus, *Arn.*

5. *L. glandulosa* (Hook. & Arn.): erect, hispid below with rigid spreading bristles; leaves broadly linear, entire; the upper with the peduncles and involucre glandular (some of the glands black and stipitate); rays 12–13, 3-cleft, nearly twice the length of the involucre; pappus very white. (Char. ex *Hook. & DC.*)—*Hook. & Arn. bot. Beechey, suppl. p.* 358. Blepharipappus glandulosus, *Hook. fl. Bor.-Am.* 1. *p.* 316. Eriopappus glandulosus, *Arn. in Lindl. nat. syst. p.* 443. Madaroglossa angustifolia, *DC. prodr.* 5. *p.* 694, ex *Hook. & Arn.*

Common on the plains of the Oregon, in sandy soil, under the shade of Purshia and Artemisia, *Douglas.* Snake Country, *Mr. Tolmie.* California, [?] *Douglas.*—Plant 6–8 inches high, vaguely branched; the heads nearly as large as in Leucanthemum vulgare. Achenia of the ray glabrous; of the disk villous. *Hook.*—A foot high, with the aspect of Echium. Lower leaves very hispid. Flowers pale yellowish. Achenia of the ray [disk?] appressed-villous. *DC.*

6. *L. Douglasii* (Hook. & Arn.): somewhat decumbent, clothed with bristly whitish hairs, not glandular; lower leaves pinnatifid-toothed; the upper entire; rays (white) 3-cleft, nearly twice the length of the disk; pappus fulvous. *Hook. & Arn. bot. Beechey, suppl. p.* 358.

Gravelly islands of the Oregon, between the Narrows and the Great Falls, *Douglas.* [illegible] a state of L. glandulosa - my poor

7. *L. heterotricha* (Hook. & Arn.! l. c.): stem branching; the upper portion, and the oblong-linear obtuse entire or denticulate leaves somewhat sca-

brous, with a short pubescence, and with stipitate black glands intermixed; rays (white?) 10–12, large, 3-cleft at the apex, twice the length of the disk; pappus very white.—Madaroglossa heterotricha, *DC.! l. c.; Hook.! ic. pl. t.* 326.

California, *Douglas!*—Plant 1–2 feet high. Leaves 1–2 inches long, 2–3 lines wide. Rays nearly an inch long, probably white. Achenia of the ray glabrous; of the disk appressed villous-pubescent. Awns of the pappus 15–17; the long plumose hairs erect. & inner ones sometimes [illegible] and into based in a small, just as in L. elegans.

135. CALLICHROA. *Fisch. & Meyer, 2nd ind. sem. St. Petersb. p.* 31.

Callichroa & Calliglossa, *Hook. & Arn.*

Heads many-flowered; the ray-flowers 10–15, ligulate, 2–3-toothed, pistillate; those of the disk tubular, perfect. Scales of the involucre oblong or lanceolate, nearly in a single series, foliaceous; the base convolute and enclosing the ray-achenia. Receptacle flat, chaffy at the margin only, or throughout. Corolla of the disk with a short pubescent tube and an infundibuliform throat, 5-toothed. Branches of the style subulate-filiform, hairy above, at length exserted and recurved. Achenia of the ray glabrous, narrowly obovate-oblong, obcompressed, somewhat incurved, crowned with a small protuberant disk, destitute of pappus; of the disk villous, obcompressed, subclavate or narrowly cuneiform-oblong, with a pappus of 12 to 25 subulate and naked serrulate-scabrous awns.—Annual (Californian) herbs, with entirely the habit and aspect of Layia and Oxyura. Flowers yellow; the rays often whitish at the apex. Anthers purplish-brown.

The first section is only distinguished from Layia by the naked, instead of plumose awns of the pappus, and might perhaps be combined with it.

§ 1. *Receptacle naked and pubescent at the centre, chaffy at the margin in one or more series; the exterior resembling the scales of the involucre: achenia narrow: awns of the pappus* (20–25) *setiform, equal.*—CALLICHROA, Fisch. & Meyer.

1. *C. platyglossa* (Fisch. & Meyer, l. c.): somewhat hirsute with slender white hairs, and cinereous with a short pubescence, with small stipitate glands intermixed; leaves linear-lanceolate; the lower incisely pinnatifid, the upper entire or slightly toothed; achenia of the disk slender, slightly obcompressed, villous, when mature rather longer than the pappus; corolla somewhat pubescent.—*Don, Brit. fl. gard. ser.* 2. *t.* 373; *Schauer, del. sem. Vratisl.* 1837, *p.* 3; *DC. prodr.* 7. *p.* 294; *Hook. & Arn. bot. Beechey, suppl. p.* 357; *Hook. bot. mag. t.* 3719. Madaroglossa (Callichroa) hirsuta & angustifolia, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 394.

California, at the Russian Colony Ross, *Fisch. & Meyer*, and at St. Barbara and Monterey, *Nuttall!*—Plant branching from the base, 6–12 inches high. Heads showy, an inch and a half in diameter, including the light bright yellow cuneiform-oblong rays; the latter whitish at the tips in the wild plant, according to Nuttall.—The small and stipitate dark glands are not mentioned in the account of the cultivated plant; with which Mr. Nuttall's specimens otherwise well accord.

§ 2. *Receptacle chaffy throughout; the chaff membranaceous, short: achenia of the disk oblong-cuneiform: awns of the pappus (about 12) subulate, very unequal.*—CALLIGLOSSA, Hook. & Arn. 7 – 12

2. *C. Douglasii:* stem glabrous below, loosely branched and pubescent above; leaves scabrous-ciliate; the lower pinnatifid, with the linear segments entire or sparingly incised; the uppermost linear-lanceolate, entire; scales of the involucre hispid on the back with short and stout bristles; achenia of the disk silky-villous; the corolla glabrous.—Calliglossa Douglasii, *Hook. & Arn.! bot. Beechey, suppl. p.* 356. Oxyura chrysanthemoides, *Lindl.! bot. reg. t.* 1850 (as to the figure); *Fisch. & Meyer, 3rd ind. l.c.* 1837, *& in Linnæa,* 12. *suppl. p.* 102; *Schauer, del. sem. Vratisl.* 1837, *p.* 3, *& in Linnæa, l. c. p.* 89; not of *DC.*

California, *Douglas,* (v. sp. cult.)—Plant very much resembling Oxyura chrysanthemoides in aspect, but with narrower and less compressed villous achenia. Awns of the pappus rigid and dilated at the base; 3 or 4 of the longer equal in length to the achenia. Rays whitish at the tips.

136. OXYURA. *DC. in Lindl. nat. syst., & prodr.* 5. *p.* 693.

Tollatia, *Endl.*—Oxyura, *Lindl. bot. reg.* as to descr. only.

Heads many-flowered; the ray-flowers 10–12, ligulate, coarsely 2-3-toothed at the apex, pistillate; those of the disk tubular, perfect; many of the central infertile. Scales of the involucre in a single series, hispid-ciliate, convolute at the base and enclosing the ray achenia, abruptly narrowed above into a linear foliaceous and spreading appendage. Receptacle flat, chaffy throughout; the chaff oval-oblong, membranous, ciliate, with acute herbaceous or colored hairy tips. Corolla with a hairy tube; the infundibuliform limb in the disk-flowers deeply 5-toothed. Branches of the style in the disk-flowers long and linear, very acute, hispid, exserted and revolute. Achenia of the ray and disk similar, glabrous, obovate, obcompressed (with a very small epigynous disk), entirely destitute of pappus; the central often abortive.—An annual erect nearly glabrous herb, with the habit of Chrysanthemum segetum; the branches pubescent at the summit, and terminated by rather large heads. Leaves alternate, pinnatifid; the lobes 4–8 pairs, oblong-linear, entire, short, scabrous-ciliate. Flowers yellow: the anthers blackish.

O. chrysanthemoides (DC.! l. c.)—*Hook. & Arn.! bot. Beechey, suppl. p.* 356; not of *Bot. reg., Fisch. & Meyer, Schauer, &c.*

California, *Douglas!*—Tube of the corolla somewhat dilated at the base, and embracing the apex of the short and flat achenia.—This plant, we believe, has never been cultivated. In the *Mantissa Compos.* (7. *p.* 294), De Candolle has incautiously adduced the syn. of *Lindl. bot. reg., Fisch. & Meyer, &c.;* which belongs to Callichroa (Calliglossa) Douglasii.

137. HEMIZONIA. *DC. prodr.* 5. *p.* 692.

Hemizonia & Hartmannia, *DC.*

Heads several-many-flowered; the ray-flowers 5–20, ligulate, 2-3-lobed, pistillate; those of the disk tubular, perfect, but infertile. Scales of the involucre in a single series, oblong or lanceolate, concave or convolute and partly enclosing the ray-achenia, often subtended by linear bracts. Receptacle flat, chaffy either throughout, or only at the margin and punctate at the centre; the chaff often more or less united. Corolla of the disk-flowers infundibuliform, 5-toothed; the teeth (and often the tube) mostly glandular-bearded. Appendages of the style in the disk-flowers linear or subulate, acute, very hispid. Achenia glabrous; those of the ray obovoid, gibbous, or slightly ob-compressed, convex on the back (where it is sometimes rugose or sparsely muricate,) often flattish anteriorly, slightly stipitate; the apex mostly oblique, and terminated with a small often papillose-exserted or beaked areola; of the disk sterile or abortive, oblong, 5–7-nerved. Pappus none; or in the disk-flowers sometimes of 5–8 short and unequal lacerate chaffy scales.—Low annual or perennial hairy and sometimes glandular (Californian) plants; with alternate often crowded lanceolate or linear leaves. Heads (middle-sized) solitary or clustered. Flowers mostly yellow. Anthers brownish.

The achenia of the disk in Hartmannia fasciculata and H. corymbosa are certainly sterile, at least in our specimens, although they contain a rudimentary ovule; as do nearly all the species placed by De Candolle in Hemizonia. Hence the former genus is only to be distinguished by the pappus; which is not well described by De Candolle, and which is said to be partly wanting in one, and entirely so in another of the three species referred to it. The remarkable union of the chaff in some species of Hemizonia, Hartmannia, and Calycadenia, seems also to have escaped De Candolle's observation. Hooker & Arnott have noticed it in Hemizonia, *DC.*; and Nuttall in Hartmannia.

§ 1. *Heads* 10–12-*flowered, corymbose-fasciculate: chaff of the receptacle of* 5 *or* 6 *scales in a single series interposed between the ray and disk-flowers, united to the middle: pappus of the disk-flowers chaffy, lacerate-toothed at the apex: leaves incisely pinnatifid.*

1. *H. fasciculata:* annual, hirsute; stem stout, corymbose above; the small heads numerous, densely fascicled at the summit of the fastigiate branches; leaves linear-lanceolate; the lower pinnatifid; the upper incisely toothed or nearly entire, closely sessile; rays 5, short, obovate-cuneiform; ray-achenia obscurely rugose on the back when old, or slightly muricate; pappus of the disk-flowers of 5–6 oblong chaffy scales, not half the length of the corolla, unequally and very acutely lacerate-toothed at the apex.—Hartmannia fasciculata, *DC.! prodr.* 5. *p.* 693; *Hook. & Arn.! bot. Beechey, suppl. p.* 357. H. glomerata, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 391.

California, *Douglas! Nuttall!* April–May.—A span high. Flowers bright yellow. Disk-flowers enclosed in a 5–6-angular tube or cup, formed by the membranaceous carinate-concave chaffy receptacular scales, which are united (although not very firmly) by their edges at least to the middle; the apex mucronate-acuminate. Fertile (ray) achenia broad at the summit, with a small beak-like areola projecting from the anterior margin: the stipe short and incurved.

§ 2. *Heads many-flowered, somewhat solitary: receptacle chaffy throughout; the scales of the outer series united: pappus of the disk-flowers very small, membranous, fimbriate-lacerate, nearly obsolete* (*or wanting,* DC.) *in the exterior flowers: leaves pinnatifid.*

2. *H. corymbosa:* annual, hirsute-pubescent; heads nearly solitary at the summit of the stem or branches; leaves pinnately parted, tapering into a petiole; the lobes 5–9 pairs, linear, entire; rays 15–20, oblong; ray-achenia obscurely 4-angular, somewhat rugose or muricate on the back; pappus of the disk-flowers of 6–8 hyaline irregularly laciniate very acute scales, about one-fourth the length of the tube of the corolla.—Hartmannia corymbosa, *DC.! prodr.* 5. *p.* 694.

California, *Douglas!*—Nearly a foot high, slender. Chaff scarious; the exterior series united nearly to the acute herbaceous and hairy tips. Achenia stipitate, tipped with a protuberant areola from the inner margin of the apex. Pappus wanting in the exterior disk-flowers, according to De Candolle.

3. *H.? ciliata:* annual, stem somewhat glabrous, loosely branched at the summit, but scarcely corymbose; leaves pinnately parted, with the entire lobes in 5–8 pairs; the lower attenuate into a petiole; the upper (partly clasping) and the floral ones ciliate; heads many-flowered; rays ample, 10–12, obovate; achenia all smooth and destitute of pappus. *DC.*—Hartmannia ciliata, *DC. prodr.* 5. *p.* 694.

California, *Douglas.*—Plant with entirely the habit of the preceding; but the achenia all destitute of pappus and terminated by an areola, and the tube of the corolla obcompressed; therefore approaching the following tribe. Head nearly that of Chrysanthemum Myconis. *DC.*—This ambiguous plant is unknown to us.

§ 3. *Heads many-flowered, solitary or crowded at the summit of the branches: chaff of the receptacle in a single series between the ray and disk-flowers, not united: pappus none: leaves undivided.*

4. *H. angustifolia* (DC.): stem much branched, suffrutescent at the base; the branches, leaves, and involucre minutely pubescent; leaves and bracts narrowly linear, entire; heads bracteate, somewhat solitary; chaff of the receptacle narrow, membranaceous; achenia obovate, not stipitate, the apex mucronate with a short acute cone.—*DC.! prodr.* 5. *p.* 692. H. congesta, *Hook. & Arn. bot. Beechey, suppl. p.* 355?

California, *Douglas!*—There appears to be some difficulty in distinguishing these two species by the description. What we have as H. angustifolia agrees with the character of De Candolle, except that the leaves (at least the upper) and the scales of the involucre are clothed with both villous and glandular hairs (just as H. congesta is described); and the chaff is membranaceo-foliaceous. The stipe of the achenium and the terminal areola doubtless vary with age. The (yellow) rays, about 12 in number, are slightly exserted, with the branches of the style very long and filiform: the tube of the disk corolla glandular, as in most species of the genus, and the teeth hispid-bearded on the margin. The leaves are about half an inch long, and obtuse.

5. *H. congesta* (DC.): stem herbaceous, erect, branching; the branches somewhat hispid with soft glandular and glandless hairs; leaves linear-lanceolate, sparsely villous-glandular; heads bracteate, crowded; chaff of the receptacle somewhat coriaceous, foliaceous; achenia obovate, obtuse at the apex, when mature produced at the base into a rostrate stipe, which is strongly recurved, and bears a white areola. *DC. l. c.*—H. multicaulis, *Hook. & Arn. l. c.?*

California, *Douglas.*—Of this we have no specimen, if our H. angustifolia be the true plant. The H. multicaulis, *Hook & Arn.*, which is doubtless the same with one or the other of these species, is said to have an annual or biennial root; the stems somewhat simple, or corymbosely branched at the summit, hirsute with soft spreading hairs; the radical leaves linear-lanceolate, serrulate, several-nerved; rather glabrous; the cauline somewhat villous, long and linear, the lower opposite and serrulate; the heads bracteate and in clusters of 2–3: the achenia obovate, obtuse, with an inflexed rostelliform stipe; the chaff only a marginal series.

§ 4. *Heads many-flowered, nearly solitary: receptacle chaffy throughout; the chaff, with the scales of the involucre and the upper leaves, subulate-spinescent: pappus none.*

6. *H. pungens:* herbaceous, somewhat ligneous at the base; stem sparingly branched, setose with whitish hairs; leaves crowded; the lower pinnatifid, with oblong or oblong-lanceolate spinose-mucronate lobes; the upper and those of the axillary fascicles linear, entire, rigid, spinescent, the recurved margins papillose-hairy; heads somewhat solitary, bracteate; scales of the involucre spinescent, glandular, nearly equalling the 2-cleft rays; achenia of the ray gibbous, with a terminal very oblique areola; receptacle wholly chaffy; the chaff lanceolate-subulate, spinescent. *Hook. & Arn.*—Hartmannia? pungens, *Hook. & Arn. bot. Beechey, suppl. p.* 357; *Hook. ic. pl. t.* 334.

California, *Douglas.*—"This is a very remarkable plant, more like a species of Navarettia among the Polemoniaceæ than one of the present order. We can find no trace of it in De Candolle's Prodromus." *Hook. & Arn.*

§ 5. *Heads few–many-flowered, not bracteate, corymbose: receptacle chaffy throughout; the scales of the outer series united: pappus none: leaves glandless, entire or serrulate: flowers white?*

7. *H. filipes* (Hook. & Arn.): stem suffruticose, erect, simple, hirsute with soft hairs; leaves linear, entire, 1-nerved, somewhat hirsute with soft hairs, not glandular; the lower elongated, acuminate, with smaller ones fascicled in their axils; the upper much smaller and bractieform, with black glands; corymb loose; the rather rigid branches filiform and glabrous; heads solitary on long pedicels, few-flowered; scales of the obconical ebracteate involucre few, hirsute; achenia oblong, attenuate at the base. *Hook. & Arn. bot. Beechey, suppl. p.* 356.

California, *Douglas.*—"The corymb is lax, the primary branches bear a few glanduliferous bracteas or leaves; but the stalk that supports the capitulum is slender, quite naked, and rigid. In habit it is very dissimilar to the other species." *Hook. & Arn.*—This species, which is unknown to us, would seem to have many points of resemblance to the Osmadenia tenella of Nuttall.

8. *H. luzulæfolia* (DC.): stem erect, tomentose-canescent, corymbose at the summit; the branches and the involucre hirsute and somewhat viscid; leaves linear-lanceolate, silky-villous, not glandular; the lower elongated, tapering to the base, denticulate, 3–5-nerved, sometimes opposite; involucre hemispherical, many-flowered, nearly bractless; achenia of the ray obovate, obcompressed, somewhat gibbous, with a terminal obtuse sessile areola; those of the disk abortive.—*DC.! prodr.* 5. *p.* 692. H. sericea, *Hook. & Arn. bot. Beechey, l. c.*

California, *Douglas.*—Perennial? herbaceous, 8–12 inches high. Lower leaves 4–5 inches long, 3–4 lines broad, and not unlike those of a Luzula; the appressed silky pubescence becoming loose and villous-tomentose on the old leaves, at length somewhat deciduous: those of the branches or loose corymb one-fourth to half an inch long. Heads 3–4 lines broad; the scales of the involucre 8–10, rather shorter than the disk. Exterior series of the obtuse membranaceous chaff united nearly to the apex; a portion of the inner also irregularly united with each other, and with the outer series. Rays 8–10, apparently white, a little longer than the disk, broadly cuneiform, deeply 3-lobed (the middle lobe smallest), convolute, with an extremely short thickened and glandular tube: the fertile achenia with a very short incurved stipe, the base of which is dilated into a scarious disk. Corolla of the disk white or yellowish; the chocolate-brown anthers tipped (as in other species) with a broad roundish-deltoid appendage; the ovaries abortive.

§ 6. *Heads many-flowered, somewhat solitary, bracteate: receptacle chaffy throughout; the chaff, as well as the scales of the involucre, glandular-laciniate, distinct or united only at the base: pappus none: leaves entire; the uppermost tipped with a large truncate gland: flowers yellowish-white?*

9. *H. macradenia* (DC.): stem suffruticose, much branched; leaves linear, entire, slightly hairy (as well as the branches), thickish, crowded, with smaller ones often fascicled in their axils; "the lower sparingly serrate" (*DC.*); the uppermost and the numerous bracts tipped with a large and sessile truncate or cup-shaped gland; scales of the involucre and chaff of the receptacle glandular, their margins and back covered with callous cylindrical projections or laciniate teeth, which are terminated by a thick truncate gland; fertile achenia obovate, gibbous, somewhat angled on the back and face, the apex strongly incurved, and terminated by a short ascending beak; those of the disk sterile.—*DC.! prodr.* 5. *p.* 693; *Hook. & Arn.! l. c.*

California, *Douglas!*—This singular plant approaches Calycadenia in habit, as De Candolle remarks; but it is surely by some mistake that it is said to resemble H. luzulæfolia. We find the achenia to accord with De Candolle's description. The heads (half an inch in diameter) are solitary or several, together and nearly sessile at or near the summit of the branches: the broadly cuneiform numerous rays somewhat exserted, 3-lobed at the apex, and raised on a slender glandular-hispid tube. The upper leaves are about half an inch long, half a line broad (rather dilated at the base), with still smaller ones in the axils, tipped with a gland nearly as in Calycadenia.

138. CALYCADENIA. *DC. prodr.* 5. *p.* 695.

Heads many-flowered; the ray-flowers 3–5, pistillate, 3-lobed or 3-parted, with a slender mostly glandular tube; those of the disk tubular, perfect, but mostly infertile. Involucre bracteate at the base; the scales in a single series, concave, partly enclosing the ray-achenia. Receptacle small and flat, naked in the centre, chaffy at the margin; the chaff in a single series between the ray and disk-flowers, distinct or united. Corolla of the disk infundibuliform, 5-toothed. Branches of the style in the disk-flowers with long filiform hirsute appendages. Achenia somewhat hairy; those of the ray obovoid-triangular, destitute of pappus; of the disk quadrangular-obcompressed, tapering to the base, fully formed and ovuliferous, but apparently infertile, with a pappus of 5–10 chaffy and mostly awned scales.—Annual slender (Californian) herbs; with rigid chiefly alternate narrowly linear or subulate 1-nerved leaves, with revolute margins; the floral ones (crowded on the short branchlets and at the base of the heads, or fascicled in the axils of the cauline leaves) usually terminated by a large, sessile or stipitate, acetabuliform gland. Heads terminal or axillary. Corolla of the disk and ray white: anthers dark brown.

The flowers are apparently white in all the species, not yellow, as stated by De Candolle. The pappus is not mentioned in the generic character of the latter author: whence Endlicher has incautiously introduced the phrase "Pappus nullus."

§ 1. *Stem simple, strict: floral leaves tipped with a large saucer-shaped or nail-headed gland: rays somewhat convolute, unequally and often deeply 3-cleft: teeth of the disk-corolla short, ovate.*—EUCALYCADENIA.

1. *C. truncata* (DC.! l. c.): stem very glabrous; leaves slightly scabrous; the upper cauline, as well as the fascicled floral ones, tipped with a nearly sessile gland; heads terminal and axillary, subsessile, solitary, remote; chaff of the receptacle truncate, scabrous on the back, distinct or nearly so; pappus of 7–10 oblong obtuse scales, incisely toothed at the apex, several times shorter than the corolla or the slightly hairy disk-achenia.
California, *Douglas!*—Stem reddish, shining. Achenia of the ray glabrous, somewhat rugose.

2. *C. villosa* (DC.! l. c.): stem hirsute with white hairs; leaves setose-hispid towards the base; the floral ones, as well as the scales of the involucre, very villous below, mostly tipped with a stipitate gland; heads terminal and axillary, remote, solitary, nearly sessile; chaff of the receptacle acute, hairy towards the apex, often united; achenia villous; pappus of about 10 rigid subulate-awned denticulate-scabrous scales, as long as the disk-corolla.—*Hook. & Arn.! bot. Beechey, suppl. p.* 358.
California, *Douglas!*—Plant slender, about 10 inches high.

3. *C. multiglandulosa* (DC.! l. c.): stem scabrous-puberulent and sparsely hispid; leaves sparsely setose-hispid; the upper cauline tipped with a subsessile gland; the floral ones crowded or fascicled on the very numerous and short axillary branchlets (which bear solitary heads), the back and margins above, as well as the apex, furnished with stipitate glands; scales of the involucre and the united chaff of the receptacle acutish, beset with stipitate glands; achenia glabrous; pappus of about 5 lanceolate subulate-awned scales, and as many intermediate and shorter oblong and obtuse denticulate scales.
California, *Douglas!*—Apparently the largest species; 18 inches or more in height. Cauline leaves 2 inches long. Rays short, very broad, convolute, with a very short tube, deeply 3-lobed; the lobes mucronulate; the middle one much smaller than the others.

4. *C. cephalotes* (DC.! l. c.): stem pubescent above; the heads nearly sessile and crowded at the summit, and sometimes solitary in the upper axils; leaves long and very slender, nearly glabrous, sparsely hispid-ciliate towards the base; the lower sometimes opposite; the floral few, tipped with a nearly sessile gland, and towards the summit furnished, as are the scales of the involucre and the mucronate-acute united chaff of the receptacle, with smaller scattered stipitate glands; achenia sparsely villous; pappus of 5 rigid lanceolate-subulate and somewhat awned scales, about two-thirds the length of the corolla, and as many intermediate and shorter lanceolate-oblong obtuse scales.
California, *Douglas!*—Plant slender, 6–10 inches high. Leaves linear

filiform, 2 inches or more in length. Corolla of the disk with a glabrous tube; of the ray with a rather short glandular tube; the ligule very broad, convolute, deeply 3-cleft; the lateral lobes roundish-cuneiform; the middle one much smaller.

§ 2. *Stem much branched, diffuse, minutely glandular, as well as the involucre and upper leaves; the cup-shaped glands none: rays 3-parted down to the slender tube; the oblong lobes somewhat equal, spreading: teeth of the disk-corolla (purple in the throat) oblong-linear.*—OSMADENIA, Nutt.

5. *C. tenella:* stem somewhat hairy; the branches slender, divaricate, sparingly leafy, terminated by mostly solitary heads; leaves very narrowly linear, scabrous, setose-hirsute towards the base; the lower cauline crowded; those of the branches small, acerose-subulate; bracts few; scales of the involucre and the chaff of the receptacle ovate-lanceolate, somewhat acuminate, covered with small glands; the latter united; achenia of the ray glabrous, rugose; of the disk slightly hairy; scales of the pappus 8–10; the alternate ones produced into rigid very scabrous awns, rather shorter than the corolla; the intermediate ones much shorter, lanceolate-oblong, lacerate-denticulate.—Osmadenia tenella, *Nutt.! in trans. Amer. phil. soc. (n. ser.) 7. p.* 392.

St. Diego, California, *Nuttall!* May.—Plant 6–12 inches high, erect at the base; the filiform branches widely spreading. Heads 3 lines long; the linear-acerose bracts, and the somewhat glutinous involucre and chaff furnished with small and flat slightly pedicellate glands. Chaff united nearly to the summit. Rays white, exserted; the middle division smallest; the fertile achenia apiculate at each end.—The plant is said to exhale a powerful and very agreeable aroma, whence the name imposed by the discoverer.

139. LAGOPHYLLA. *Nutt. in trans. Amer. phil. soc. l. c. p.* 390.

Heads few-flowered; the ray-flowers about 5, pistillate, ligulate, cuneiform, 3-lobed; those of the disk 5–6, staminate and pistillate, but sterile by the abortion of the style and ovary. Scales of the involucre 5, similar to the leaves, ovate-lanceolate, the margins infolded and enclosing the ray-achenia. Receptacle flat, fimbrillate-hirsute in the centre, chaffy at the margin between the ray and disk-flowers; the chaffy scales 5 or 6 in a single series, distinct. Branches of the style in the disk-flowers subulate-filiform, hirsute. Achenia smooth, destitute of pappus; the fertile narrowly oblong-cuneiform, obcompressed, straight, nearly flat and obscurely angled on the back, carinate-angled anteriorly, and hence somewhat triangular; those of the disk entirely abortive.—A perennial? exceedingly branched slender herb, with a smooth and glabrous stem and branches, which are very leafy at the extremity, and terminated by small sessile heads. Leaves alternate, almost imbricated on the branchlets, deciduous, linear-oblong (those of the branches 3–4 lines long), thickish, entire, obtuse, with involute margins, very villous, (as well as the involucre and the summit of the chaff,) especially along the margins, with long and soft white hairs. Rays short and broad, pale yellow.

L. ramosissima (Nutt.! l. c.)

Plains near Wallawallah, Oregon, *Nuttall!*—A remarkable plant, 2–3 feet high. We have not seen the cauline leaves, which are apparently caducous; those of the branches are clothed with long and very soft hairs, thickly spreading from the margin, so as almost to resemble the foot of a hare; whence the name.

140. ANISOCARPUS. *Nutt. in trans. Amer. phil. soc. l. c. p.* 388.

Heads many-flowered; the ray-flowers about 12, ligulate, pistillate, in a single series; those of the disk tubular, staminate and pistillate, but sterile by the abortion of the ovary. Scales of the subglobose involucre as many as the rays, carinate-complicate, and wholly enclosing their achenia. Receptacle somewhat convex, naked and smooth, except the margin, which is furnished with a single series of more or less united chaffy scales between the ray and disk-flowers. Tube of the corolla pubescent. Rays exserted, cuneiform, 3-cleft at the apex. Branches of the style in the disk-flowers subulate, very acute, minutely hispid. Achenia of the ray oblong, obcompressed, flat, somewhat incurved, glabrous, without lateral angles or nerves, crowned with a small sessile disk, destitute of pappus; of the disk abortive, with a pappus of 5–8 small fimbriate-lacerate membranaceous scales.—A villous-hirsute perennial herb, with the aspect of Madia, or Madaria; the leaves linear, elongated, entire or denticulate, sessile, alternate, or the lower opposite. Heads paniculate-corymbose or racemose; the involucre, naked peduncles, and upper part of the stem very glandular. Flowers bright yellow.

A genus intermediate between Madaria (with which it accords in aspect, and from which it chiefly differs in the pappus of the disk-flowers), and Hartmannia, *DC.* (§ of Hemizonia), from which it is distinguished by the flat compressed achenia, entirely enclosed in the involucral scales.

A. madioides (Nutt.! l. c.)

Banks of the Oregon, among rocks, in shady forests, at the outlet of the Wahlamet; rather rare, *Nuttall!*—Stem simple, 1–2 feet high, hirsute with long and short hairs. Radical leaves linear-oblong, remotely serrulate, 3–4 inches in length; the cauline gradually reduced in size. Involucre 3–4 lines in diameter: rays conspicuous, but rather short.—We have not seen the mature fruit.

141. MADARIA. *DC. mem. soc. Genev.* 7. *p.* 280; *Endl. iconogr. t.* 36.

Heads many-flowered; the ray-flowers 10–15, ligulate, pistillate, in a single series; those of the disk tubular, staminate and pistillate, but sterile by the abortion of the ovary. Scales of the subglobose involucre as many as the rays, complicate and enclosing their achenia. Receptacle somewhat convex, fimbrillate-hirsute, except the margin, which is furnished with 1 or 2 series of chaffy scales between the ray and disk-flowers. Corolla pubescent or hairy at the base; the rays twice the length of the involucre. Achenia of the ray as in Madia; those of the disk abortive; all destitute of pappus.—Annual (Californian) hairy and glandular herbs, with the aspect of Madia; the heads more showy and corymbose. Leaves lanceolate or linear. Flowers yellow; the rays often spotted with purple at the base: anthers brown.

1. *M. elegans* (DC.): stem and leaves hispid with glandless and glanduliferous hairs intermixed. *DC.! not.* 7. *pl. rar. Genev. p.* 17, *& prodr.* 5. *p.* 692; *Hook. & Arn.! bot. Beechey, suppl. p.* 355; *Hook. bot. mag. t.* 3548. Madia elegans, *Don, in bot. reg. t.* 1458. M. viscosa, *β. Hook. fl. Bor.-Am.* 2. *p.* 24.

California! and Oregon! Common in cultivation.—Rays linear-cuneate, spotted with purple at the base, acutely 3-cleft at the apex.

2. *M. corymbosa* (DC.): stem and involucre hispid with glandless and glanduliferous hairs intermixed; leaves linear, villous, somewhat hispid, glandless. (Varies with the glands many, or very few.) *DC.! l. c.; Hook. & Arn. l. c.; Endl. iconogr. t.* 36. M. racemosa, *Nutt.! in trans. Amer. phil. soc. l. c.*

β.? hispida (DC. l. c.): stem, leaves, and involucre hispid with spreading hairs, all of them glandless.

California and Oregon!—Rays sometimes with a brown spot at the base, 3-cleft at the apex.

142. MADIA. *Molina, Chil.; Cav. ic.* 3. *p.* 50, *t.* 298; *DC. l. c.*

Madia & Madorella, *Nutt.*

Heads usually many-flowered; the ray-flowers 5–12, ligulate, pistillate, in a single series; those of the disk tubular, perfect. Scales of the subglobose involucre in a single series, as many as the rays, carinate-complicate and enclosing their achenia. Receptacle flat, naked, except the margin, which is furnished with 1–2 series of chaffy scales, usually more or less united. Corolla with a pubescent tube; the rays slightly exserted. Branches of the style in the disk-flowers lanceolate, acute or acuminate, the margins minutely hispid. Achenia of the ray and disk similar, compressed, nearly straight, oblong-obovate, glabrous (minutely and closely striate), destitute of pappus, usually more or less one-nerved or angled on each side.—Annual or biennial hairy and glandular herbs (natives of Chili, California, & Oregon); with oblong or linear sessile or partly clasping entire or denticulate leaves; the lowest often opposite, the others alternate. Heads bracteate, sessile, or on short peduncles, somewhat racemose. Flowers pale yellow: anthers brown.

1. *M. sativa* (Molina): villous and glandular throughout; leaves lanceolate or oblong-lanceolate; heads many-flowered, mostly racemose and pedunculate; achenia manifestly 1–2-angled on each side.—*DC. not.* 7. *pl. rar. Genev., & mem. soc. Genev.* 7. *p.* 277, *& prodr.* 5. *p.* 691; *Hook. & Arn. bot. Beechey, suppl. p.* 355; *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 387. M. viscosa, *Cav. l. c.; Hook.! fl. Bor.-Am.* 2. *p.* 24, in part. M. mellosa, *Jacq. hort. Schœnb.* 3. *t.* 302. Sclerocarpus gracilis, *Smith, in Rees, cycl.*, ex *Hook. & Arn. l. c.*

β. congesta: heads clustered at the summit of the stem and branches.—M. congesta, *Nutt.! l. c.*

Oregon! and California! doubtless indigenous. Also a native of Chili, where it is cultivated for the oil yielded by its seeds.

2. *M. racemosa:* hirsute, the stem and linear mostly acute leaves scarcely glandular; heads racemose, many-flowered; involucre glandular; ray-achenia flat, not at all (or obscurely) angled on the sides.—Madorella racemosa, *Nutt.! in trans. Amer. phil. soc. l. c.*

Oregon, near the Wahlamet, *Nuttall!* Fort Vancouver, *Mr. Tolmie!*—A more slender plant than the preceding, 12 to 20 inches high; the stem sparingly glandular at the summit; the leaves clothed with short somewhat appressed hairs, sometimes glandular-denticulate. Rays 8–12, rather conspicuous; the disk-flowers several. The ray-achenia are flat and even on the sides; but those of the disk are more or less 1-nerved or angled: and the preceding species presents such diversities that we are not very sure that this is entirely distinct from it. The style accords with M. sativa.

3. *M. dissitiflora:* stem, as well as the lanceolate-linear leaves, hirsute-pubescent; the branches glandular; heads scattered, few-flowered; scales of the involucre 5–8, very glandular; achenia all flat, and scarcely or not at all angled on the sides.—Madorella dissitiflora, *Nutt.! l. c.*

Blue Mountains and plains of Oregon, *Nuttall!*—A slender twiggy plant, 6 to 15 inches high; the heads scarcely 3 lines in diameter, with inconspicuous rays. Disk-flowers 3–6. Style as in M. sativa.

143. AMIDA. *Nutt. in trans. Amer. phil. soc. (n. ser.) 7. p. 390.*

Heads few-(2–6-) flowered; the flowers either all tubular and perfect (the corolla with a cylindrical pubescent tube, and a very short scarcely dilated 5-toothed limb), or one or two of them pistillate and radiate, with a very small cuneiform and 3-lobed ligule. Involucre oblong, subtended by 2–3 linear bracts; the scales as many as the flowers, carinate-cymbiform, nearly straight, each nearly enclosing an achenium, all more or less united with each other by their inner margins. Receptacle small, somewhat punctate. Branches of the style in the perfect flowers oblong, obtuse, slightly hairy. Achenia linear-oblong, straight or slightly incurved, compressed-3–4-angled, glabrous (minutely striate), destitute of pappus, terminated by a sessile areola.—Annual slender hirsute and glandular herbs (indigenous to the plains of the interior of Oregon and of the Saskatchawan), with the aspect of Madia; the leaves linear, sessile, entire; the small heads irregularly clustered (2–5 together) in the axils and on the somewhat corymbose branches. Flowers pale yellow, scarcely exserted beyond the involucre.

These plants are, as it were, singularly reduced Madiæ; in which, as the flowers form but a single verticil, the involucral scales supply the place of the chaff of the receptacle. In both species the flowers vary from 2 (both perfect), when the involucre is compressed, to 3, 5, or rarely 6, when the involucre presents as many carinate lobes and strong re-entering angles. This genus presents the only instance in which a plant of the division Madieæ has been found east of the Rocky Mountains, or of the Andes. Mr. Nuttall doubtless was not aware that his A. hirsuta is the Madia glomerata, *Hook.*; or he would have adopted that name for the species.

1. *A. gracilis* (Nutt.! l. c.): scabrous-hirsute with appressed hairs; leaves narrowly linear, ciliate with a few spreading bristles near the base.

Rocky Mountain plains and prairies of the Oregon, *Nuttall!*—Stem about a foot high, slender, rigid, mostly simple; with the clusters of heads often axillary, and smaller than in the following.

2. *A. hirsuta* (Nutt.! l. c.): hirsute with long spreading hairs and short stipitate glands; stem often corymbose at the summit.—Madia glomerata, *Hook.! fl. Bor.-Am.* 2. *p.* 24.

Plains of the Saskatchawan, *Drummond!* Plains of the Rocky Mountains and of the Oregon, with the preceding species, *Nuttall!*—A stouter plant than A. gracilis, with broader and more carinate involucral scales.

144. HARPÆCARPUS. *Nutt. in trans. Amer. phil. soc. l. c. p.* 389.

Heads few-flowered; the ray-flowers 5–8, pistillate, in a single series, each enclosed in one of the carinate-complicate and lunate scales of the involucre; the disk-flower solitary! tubular and perfect, fertile, surrounded by a 5-angled and 5-toothed cup, consisting of the united chaff of the receptacle. Corolla glabrous; of the disk-flower infundibuliform, 5-toothed; of the rays scarcely exceeding the involucre, tubular below, cleft above anteriorly; the very short and broad ligule 2–3-toothed or lobed, about the length of the linear glabrous branches of the style. Branches of the style in the disk-flower short, lanceolate-oblong, with barbellate-hispid margins. Achenia glabrous, much compressed, destitute of pappus; of the rays gibbous, obovate-lunate, the incurved summit produced into a short ascending beak, when mature deciduous with the scales of the involucre that enclose them; that of the disk semi-obovate, straight, with a truncate terminal areola, included by the united chaff.—A small slender hirsute annual (3–12 inches high), with somewhat the aspect of a Myosotis; the erect simple stem clothed with mostly alternate narrowly linear and entire leaves, corymbose-paniculate at the summit, bearing several small heads on simple and naked peduncles, which are elongated in fruit. Flowers pale yellow, very small.

H. madarioides (Nutt.! l. c.)—Sclerocarpus exiguus, *Smith, in Rees, cycl.* (ex char. & descr. *Hook. & Arn. bot. Beechey, suppl. p.* 355, under Madaria corymbosa.) = H. f. Hook. but a very dwarf state of it.

Oregon (' North West Coast,' doubtless collected by the venerable Menzies, if we are right as to the synonymy): common on rocky plains in depressions at the outlet of the Wahlamet, *Nuttall!* May.—Leaves about an inch long, less than a line wide. Peduncles filiform and often 2 inches long in fruit, bearing a depressed-globose head scarcely 2 lines in diameter. Involucre covered with stipitate glands and short hispid hairs intermixed. Plant somewhat aromatic.

Subtribe 6. **Anthemideæ**, *Cass., DC.*—Heads mostly heterogamous (never diœcious); the ray-flowers in one or more series, pistillate or rarely neutral, either ligulate or tubular; the disk-flowers perfect or sometimes staminate and infertile. Receptacle naked or chaffy. Anthers not caudate. Branches of the style truncate and mostly bearded at the apex, very rarely produced into a short cone. Pappus small and coroniform, or usually none.—Leaves mostly alternate.

CONSPECTUS OF THE GENERA.

Div. 1. **EUANTHEMIDEÆ.**—Receptacle chaffy. Rays ligulate, in a single series (or rarely wanting): the disk-flowers perfect.

145. **MARUTA.** Rays neutral. Achenia obovoid, ribbed.
146. **ANTHEMIS.** Rays pistillate. Achenia terete or quadrangular.
147. **ACHILLEA.** Rays pistillate. Achenia obcompressed, margined.

Div. 2. **CHRYSANTHEMEÆ.**—Receptacle naked. Rays ligulate in a single series (rarely none): the disk-flowers perfect.

148. **MONOLOPIA.** Scales of the cup-shaped involucre 8–10, united below. Receptacle convex. Achenia of the ray somewhat obcompressed; of the disk compressed. Leaves opposite and alternate.
149. **COINOGYNE.** Scales of the involucre few, imbricated, unequal. Receptacle conical. Achenia consimilar, oblong. Leaves opposite.
150. **VENEGASIA.** Scales of the campanulate involucre imbricated in several series; the 5 exterior foliaceous. Receptacle flat. Achenia obscurely quadrangular. Leaves alternate.
151. **EGLETES.** Scales of the hemispherical involucre imbricated. Receptacle convex. Achenia angled or ribbed, with a thick coroniform pappus.
152. **LEUCANTHEMUM.** Scales of the depressed involucre imbricated. Receptacle flat or convex. Achenia somewhat terete, striate, destitute of pappus, or those of the ray with an auriculæform pappus.
153. **MATRICARIA.** Scales of the involucre imbricated. Receptacle ovate-conical. Achenia angled, wingless: pappus none, obscure, or coroniform.

Div. 3. **COTULEÆ** & **ARTEMISIEÆ.**—Receptacle naked. Heads discoid, homogamous or heterogamous: the flowers all tubular; those of the disk perfect, but sometimes infertile.

154. **AROMIA.** Heads heterogamous. Achenia quadrangular, tapering to the base. Pappus of chaffy scales nearly as long as the corolla.
155. **TANACETUM.** Heads homogamous or heterogamous. Achenia angled or ribbed, with a large epigynous disk. Pappus none, or minute.
156. **ARTEMISIA.** Heads heterogamous or homogamous. Achenia obovoid, with a small epigynous disk. Pappus none.

Div. 4. **HIPPIEÆ.**—Receptacle naked. Heads monœcious: the pistillate flowers in the margin; the staminate in the centre.

157. **SOLIVA.** Fertile flowers in several series, apetalous or nearly so; the staminate few. Achenia obcompressed, with winged or callous margins, armed with the persistent style.

Div. 1. **EUANTHEMIDEÆ**, *DC.*—Receptacle chaffy. Heads mostly radiate; the rays ligulate, in a single series; the disk-flowers perfect.

145. MARUTA. *Cass., Less.; DC. prodr.* 6. *p.* 13.

Heads many-flowered; the rays neutral (rarely nearly wanting), continuous with the sterile ovary. Scales of the hemispherical involucre imbricated

in few series, shorter than the disk. Receptacle conical, chaffy throughout or only at the summit. Achenia obovoid or obpyramidal, ribbed, glabrous, destitute of pappus.—Annual (European) fetid herbs; with tripinnately divided leaves, and solitary heads terminating the branches. Rays white, often deflexed; the disk yellow.

1. *M. Cotula* (DC.! l. c.): scales of the involucre with whitish scarious margins; receptacle conical, chaffy at the summit; the chaff subulate.—Anthemis Cotula, *Linn. spec.* 2. *p.* 894; *Engl. bot. t.* 1772; *Nutt. gen.* 2. *p.* 171; *Bart. veg. mat. med. t.* 14; *Hook. fl. Bor.-Am.* 2. *p.* 318; *Darlingt. Cest. p.* 489.

β. rays few and small, or occasionally none.

Roadsides, &c., throughout the United States, where it is completely naturalized. β. St. Louis, Missouri, *Dr. Engelmann!* June–Nov.—Plant hairy or nearly glabrous, with a strong unpleasant smell, and acrid properties. Achenia more or less tuberculate in lines.—*May-weed.*

146. ANTHEMIS. *Linn.* (excl. spec.); *DC. fl. Fr. & prodr.* 6. *p.* 4.

Heads many-flowered; the rays pistillate. Scales of the involucre imbricated in few series. Receptacle convex or conical, with membranaceous chaff among the flowers. Achenia terete or very obtusely quadrangular, striate or smooth, destitute of pappus, or with a minute crown.—European or Oriental odorous herbs, with 1–2-pinnately parted leaves; the branches terminated by single bractless heads. Rays usually white; the disk yellow.

1. *A. arvensis* (Linn.): diffuse or erect, pubescent; leaves pinnately parted, the lobes linear-lanceolate, approximate, and with the teeth very acute; the branches leafless at the summit, bearing solitary heads; scales of the involucre with white scarious margins, obtuse; chaff of the conical receptacle lanceolate, acuminate; achenia crowned with a very short somewhat toothed margin. *DC. l. c.*—*Engl. bot. t.* 602; *Fl. Dan. t.* 1179; *Darlingt. fl. Cest. p.* 488.

Sparingly naturalized in the Northern States. June–Aug.—① The *Wild Chammomile* of Europe resembles Maruta Cotula, but is not fetid, with larger heads, fertile rays, &c.

A. nobilis, the officinal *Chammomile*, is said by Nuttall to be naturalized near Lewiston, Delaware.

147. ACHILLEA. *Linn.*; *Schkuhr, handb. t.* 255; *Less. syn. p.* 250.

Heads many-flowered; the rays few, or 10–20, pistillate, short. Scales of the involucre imbricated. Receptacle flat, or sometimes elongated, chaffy. Achenia oblong, obcompressed, margined, destitute of pappus.—Perennial herbs; with alternate mostly pinnatifid or pinnately divided leaves, and small corymbose heads.—*Yarrow.*

§ 1. *Involucre campanulate: rays (white) 5–20, flat, longer than the involucre (in* A. multiflora *very short): receptacle broad, nearly flat: achenia often with wing-like margins.*—PTARMICA, Tourn., DC.

1. *A. Ptarmica* (Linn.): leaves glabrous, lanceolate-linear, sharply and equally serrate with appressed teeth; heads loosely corymbose; rays 8–12, much longer than the disk.—*Linn. spec.* 2. *p.* 898; *Fl. Dan. t.* 643; *Engl. bot. t.* 757; *Pursh, fl.* 2. *p.* 552. Ptarmica vulgaris, *DC. prodr.* 6. *p.* 23.

Canada to New York, according to Pursh: but it has not since been met with. Introduced in Danvers, Massachusetts, *Dr. Nicholls!* (*Mr. Oakes.*) Aug.–Sept.—Disk and ray white.—*Sneeze-wort.*

2. *A. multiflora* (Hook.): clothed with villous hairs when young; leaves elongated, linear-lanceolate, closely and sharply pinnatifid-serrate; the teeth or segments lanceolate, mucronate, serrulate, somewhat appressed; heads in dense compound corymbs; rays 10–12, very short.—*Hook.! fl. Bor.-Am.* 1. *p.* 318. A. Ptarmica, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 33.

Woody country of Subarctic America, as far north as Fort Franklin, *Richardson! Drummond!*—Leaves evenly and deeply pectinate-incised. Ligules roundish, scarcely exceeding the disk; in which respect it differs from all other species of this section.

3. *A. borealis* (Bongard): stem striate, villous with soft hairs; leaves sessile, pinnately divided; the segments bipinnatifid; the lobes linear, acute, pubescent; heads corymbose; the peduncles villous-pubescent, branched; exterior scales of the involucre rather obtuse, the inner oblong; rays obovate, entire, 4-nerved. *DC.*—*Bongard, veg. Sitcha, in mem. acad. St. Petersb. l. c. p.* 149. Ptarmica borealis, *DC. prodr.* 6. *p.* 21.

Sitcha, *Kastalsky*, ex *Bongard.*—The heads are compared with those of A. atrata. Flowers white.

§ 2. *Involucre ovoid-oblong; rays few and short; receptacle small: achenia slightly margined.*—MILLEFOLIUM, Tourn. (Achillea, *DC*)

4. *A. Millefolium* (Linn.): cauline leaves nearly sessile, bipinnately parted; the lobes linear, 3–5-cleft, mucronate; the rachis entire or slightly toothed near the apex of the leaf; corymb compound, fastigiate; rays 4–5, obovate, white, or sometimes rose-color (var. *rosea*).—*Linn. spec. p.* 899; *Fl. Dan. t.* 737; *Engl. bot. t.* 758; *Hook.! fl. Bor.-Am.* 1. *p.* 318; *Darlingt.! fl. Cest. p.* 489; *DC. prodr.* 6. *p.* 24. A. gracile & A. occidentale, *Raf.! in herb. DC.*—Varies from almost glabrous, with the divisions of the leaves slender and loose, to densely woolly, with smaller and narrower leaves, and the divisions and lobes short and very much crowded; which is A. Millefolium γ. lanata, *Koch:* A. tomentosa, *Pursh! fl.* 2. *p.* 319 (Interior of Oregon, *Lewis!*): A. lanulosa, *Nutt.! in jour. acad. Philad.* 7. *p.* 20: & A. setacea, *Schweinitz! in Long's 2nd exped.* 2. *p.* 119.

Throughout North America, from the Arctic regions! along the Rocky Mountains! to Mexico, and from Newfoundland! to Oregon! Sitcha, and California. Also, doubtless introduced from Europe into pastures, &c. Aug.–Oct.—The flowers of A. tomentosa, *Pursh*, although yellowish in the dried specimen, were probably white in the living plant.—Bitter, astringent, and aromatic.—*Yarrow.*

A. *asplenii folia* (Vent. hort. Cels.) with rose-colored rays, is of unknown origin. It is said to have been raised from seeds brought from Carolina by Bosc; but, according to De Candolle, it had been cultivated in the gardens of Europe long before the time of Bosc.

Div. 1. CHRYSANTHEMEÆ, *DC.*—Receptacle naked. Heads radiate; the rays ligulate, pistillate, rarely neutral, in a single series (rarely wanting); the disk flowers perfect.

148. MONOLOPIA. *DC. prodr.* 6. *p.* 74 ; *Hook. ic. pl. t.* 343 *&* 344.

Heads many-flowered; the rays 8–10, pistillate; the disk-flowers perfect, but apparently sterile. Scales of the cup-shaped involucre 8–10, united below. Receptacle convex or somewhat conical, naked. Disk-corolla with a slender terete tube, and a dilated limb; the short teeth bearded. Achenia glabrous, destitute of pappus; those of the ray obovoid, slightly obcompressed; of the disk compressed, infertile?—Annual (Californian) woolly herbs; with linear-oblong sessile leaves (either opposite or alternate), and solitary heads terminating the branches. Disk and rays yellow.

1. *M. major* (DC.! l. c.): lower leaves somewhat toothed, the upper entire; scales of the involucre strictly in a single series, united almost to the summit; rays much longer than the disk; the tube furnished with a small toothed appendage opposite the ligule; receptacle nearly conical.—*Hook.! ic. pl. t.* 344, *& bot. Beechey, suppl. p.* 359, *& bot. mag. t.* 3839. Hologymne Douglasii, *Fisch., Mey. & Lall. ind.* 8. *hort. St. Petersb.* (1841) *p.* 64.
California, *Douglas!*—A foot high. Heads showy.

2. *M. minor* (DC.! l. c.): leaves sparingly lobed; the lobes linear; scales of the involucre somewhat in 2 series, united only at the base; rays short; receptacle convex.—*Hook.! ic. pl. t.* 343, *& bot. Beechey, l. c.*
California, *Douglas!*—Plant 4 or 5 inches high. Tube of the disk-corolla hirsute.

149. COINOGYNE. *Less. in Linnæa,* 6. *p.* 521, *t.* 6; *DC. prodr.* 6. *p.* 42.

Heads many-flowered; the rays several, small, pistillate; the disk-flowers tubular, glabrous, 5-toothed. Scales of the involucre few, imbricated, unequal, somewhat fleshy, very obtuse; the outermost short and rounded. Receptacle conical, naked. Branches of the style in the disk-flowers tipped with a short cone, nearly as in Tagetes. Achenia of the ray and disk similar, oblong, glabrous, many-ribbed, destitute of pappus.—A low perennial herb; with ascending stems, terminated by solitary rather large heads, and fleshy ligulate and entire opposite leaves; their tapering bases connate in a short sheath. Flowers yellow?

C. carnosa (Less.! l. c.).—*Hook. & Arn. bot. Beechey, p.* 150.
California, *Chamisso! Capt. Beechey.*—Stems about 4 inches in length. Leaves half an inch to an inch long, 1–2 lines wide.

150. VENEGASIA. *DC. prodr.* 6. *p.* 43.

Heads many-flowered; the rays numerous (15), pistillate. Scales of the campanulate involucre imbricated in several series; the 5 exterior cordate, acutish, foliaceous; the intermediate 10 ovate-orbicular, very obtuse, somewhat colored; the innermost (about 15) small and chaffy, lanceolate or oblong. Receptacle flat, naked. Tube of the corolla glandular, larger than the ovary. Branches of the style terminated by an obscure cone. Achenia oblong, obscurely quadrangular (muricate, *DC.*), destitute of pappus.—A somewhat shrubby and nearly glabrous branching plant; with alternate deltoid-cordate toothed leaves, on slender petioles, and large nodding heads on short peduncles. Ray and disk yellow.

V. carpesioides (DC.! l. c.)—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 395. California, *Douglas! Nuttall!* (In rocky situations around St. Barbara, near the sea.)—Leaves like those of Campanula rhomboidalis. Head, with the conspicuous rays, 2 inches in diameter.

151. EGLETES. *Cass. dict.; Less. syn. p.* 252; *Nutt. l. c.*

Egletes & Leucopsidium, *DC.*

Heads many-flowered; the rays numerous, pistillate. Scales of the hemispherical involucre ovate-lanceolate, with scarious margins, imbricated in few series. Receptacle convex, naked. Branches of the style in the disk-flowers terminated by a short cone. Achenia glabrous, or somewhat hairy when young, somewhat angled or ribbed, scarcely compressed, with a short and thickened coroniform pappus, which is more or less toothed or cleft.—Diffuse or erect canescent or hairy branching (West Indian, Mexican, and Arkansan) herbs; with alternate often toothed or pinnatifid leaves. Heads terminating the branches. Rays white; the disk yellow.

1. *E. Arkansana* (Nutt.): annual, canescent, erect; cauline leaves, sessile, lanceolate-oblong, obtuse, entire, or sparingly and slightly toothed; the radical tapering to the base, sinuate-toothed; rays much longer than the involucre; corolla of the disk becoming thickened and corky at the base; achenia sulcate-striate; pappus laciniate-cleft.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 394. Leucopsidium Arkansanum, *DC.! prodr.* 6. *p.* 43. Keerlia skirrobasis, *Hook.! ic. pl. t.* 240, not of *DC.*

Arkansas! and Texas! Aug.—Head smaller than in Leucanthemum vulgare: the rays linear, nearly an inch long. Pappus thickened and almost corneous at the base, usually deeply cleft into sharper segments than is represented in Hooker's figure above-cited: that of E. (Leucopsidium, *Benth.*) humilis is minutely and evenly toothed or cleft, more like that of E. Domingensis.

152. LEUCANTHEMUM. *Tourn.; DC. prodr.* 6. *p.* 45.

Heads many-flowered; the rays pistillate, numerous. Scales of the broad imbricated involucre with scarious margins. Receptacle flat or convex, naked. Corolla of the disk with a fleshy obcompressed and slightly 2-winged tube. Achenia of the disk and ray similar, somewhat terete, striate, destitute of pappus, or those of the ray sometimes furnished with an auriculæform pappus.—Perennial herbs, with alternate mostly toothed or pinnatifid leaves, and large solitary heads terminating the stem or branches. Rays white or occasionally reddish; the disk yellow.

§ *Achenia of the ray as well as the disk destitute of pappus: flowers all fertile.*—PHALACROGLOSSUM, DC. (Chrysanthemum, *Less.*)

1. *L. integrifolium* (DC. l.c.): dwarf, hairy; leaves spatulate-linear, entire, chiefly crowded at the base of the simple scape-like stem; scales of the involucre obovate-elliptical, with broad and brown lacerate scarious margins.—Chrysanthemum integrifolium, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 33; *Hook.! in Parry's 2nd voy. p.* 398, *& fl. Bor.-Am.* 1. *p.* 319.
Shores of Arctic America, and on the Copper Mountains in lat. 57°. *Richardson!*—Rays elliptical, white.

2. *L. arcticum* (DC.! l.c.): nearly glabrous; stem low, simple, naked near the summit; lower leaves cuneiform, tapering into a petiole, incised or coarsely toothed at the apex; the uppermost small, mostly linear and entire; scales of the involucre oval, with blackish scarious margins.—Chrysanthemum arcticum, *Linn. spec.* 2. *p.* 889; *Pursh, fl.* 2. *p.* 526; *Hook.! fl. Bor.-Am.* 1. *p.* 319.
Arctic America! extending south to York Factory, Hudson's Bay! and to Fort Vancouver! probably confined to the coast.—Stem 5–10 inches high. Head as large as in L. vulgare.

3. *L. vulgare* (Lam.): stem erect, somewhat branched; leaves laciniate-incised or pinnatifid-toothed; the cauline partly clasping; the radical obovate-spatulate, petioled; scales of the involucre with narrow rusty-brown scarious margins.—*DC.! prodr.* 6. *p.* 46. Chrysanthemum Leucanthemum, *Linn.! l.c.; Fl. Dan. t.* 994; *Engl. bot. t.* 601; *Pursh, l.c.; Darlingt.! fl. Cest. p.* 490.
β. involucral scales bordered with white scarious margins.
Naturalized in fields and meadows throughout the United States; also in Canada and Oregon: a very troublesome weed. *β.* Alexandria, Louisiana, *Dr. Hale!* June–July.—Leaves variable. Achenia ribbed.—*White Daisy. Ox-eye Daisy.*

153. MATRICARIA. *Linn.; Tourn.; DC. prodr.* 6. *p.* 50.

Heads many-flowered; the rays pistillate, rarely very small or wanting. Scales of the involucre nearly equal, imbricated in few series. Receptacle ample, ovate-conical! naked. Corolla of the disk 4–5-toothed; the tube more or less obcompressed, or nearly terete. Achenia angled, wingless, those of the disk and ray similar. Pappus none, or obscure, or occasionally coroniform.—Smooth and branching annuals; the pinnately parted leaves with linear or setaceous segments. Heads solitary or somewhat corymbose. Rays white; the disk yellow.

§ 1. *Heads radiate: achenia with a coroniform pappus: corolla of the disk 5-toothed.*—CHAMOMILLA, DC.

1. *M. inodora* (Linn.): glabrous; stem branched, diffuse or erect; leaves bipinnately divided; the lobes linear, acute, flattish, 2–3 parted; heads solitary on the branches; scales of the involucre oblong, with whitish [or brown] scarious margins; achenia 3–4-angled; pappus coroniform, entire. *DC.*—*Linn. fl. Suec. ed.* 2. *p.* 297; *DC. prodr.* 6. *p.* 52. Chrysanthemum inodorum, *Linn. spec.*; *Fl. Dan. t.* 696; *Schkuhr, handb. t.* 253. Pyrethrum inodorum, *Smith, fl. Brit.* 2. *p.* 900; *Engl. bot. t.* 676; *Hook.! fl. Bor.-Am.* 1. *p.* 320.
β.? nana: stem simple, with a solitary head.—Pyrethrum inodorum *β.* nanum, *Hook.! l. c., & bot. Beechey, p.* 126. P. Caucasicum, *Willd.* ex *Less.* Chrysanthemum grandiflorum, *Hook.! in Parry's 2nd voy. p.* 398.

"Lake Huron, *Dr. Todd.*" York Factory, *Drummond;* and as far north as Bear Lake, *Richardson!* β. Shores and islands of the Arctic sea, *Richardson! Chamisso.*" *Hook.*—We are not well satisfied that the American plant is the same as the European M. inodora, or that it is an annual.

§ 2. *Heads discoid, rayless: pappus none, or an obscure entire margin: corolla of the disk 4-toothed, obcompressed, and more or less 2-winged.* —ANACTIDEA, DC. (Lepidotheca, *Nutt.*)

2. *M. discoidea* (DC.! l. c.): branched from the base, glabrous, leafy; leaves 2–3-pinnately parted; the lobes short, linear, acute; heads (small) on short peduncles; scales of the involucre oval, with broad white scarious margins; rays none; pappus an obsolete coroniform margin; receptacle acutely conical.—M. tanacetoides, *Fisch. & Meyer, 7th ind. sem. St. Petersb.* Santolina suaveolens, *Pursh! fl.* 2. *p.* 520; *DC. prodr.* 6. *p.* 37. Artemisia matricarioides, *Less. in Linnæa,* 6. *p.* 210. Tanacetum matricarioides, *Less. syn. p.* 265. T.? suaveolens, *Hook.! fl. Bor.-Am.* 1. *p.* 327, *t.* 110. T. pauciflorum, *DC. prodr.* 6. *p.* 131; not of *Richards.* Cotula matricarioides, *Bongard, veg. Sitcha, in mem. acad. St. Petersb. l. c. p.* 150. Lepidotheca suaveolens, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 397.

Western America from California! to Unalaschka! Sitcha! and the adjacent parts of Asia. Also in barren places around St. Louis, Missouri, *Dr. Engelmann!* perhaps introduced, as Nuttall states it was raised in a garden at Philadelphia from seeds brought by Capt. Lewis. May–July.—An inconspicuous weed-like plant; "with nearly the receptacle, involucre, and achenia of M. suaveolens." The achenia of this species, and of M. Chamomilla, although appearing perfectly smooth under an ordinary lens, when moistened emit from their whole surface innumerable filaments of extreme tenuity, forming a kind of gelatinous mass, much as in Blennosperma, p. 272.

M. Chamomilla (Linn.), which abounds in waste grounds in Europe, and possessing to some extent the bitter and aromatic properties of the officinal Chammomile, is sometimes substituted for it, under the name of *Wild Chammomile*, has been collected in Texas ("Bottom land on the Brazos") by Dr. Lindheimer: doubtless introduced, and perhaps very locally naturalized.

Pyrethrum Parthenium (the *Feverfew*) has escaped from gardens, and is beginning to be naturalized in some places.

P. serotinum, Linn., which has been in cultivation for a long period, is doubtless not of North American origin.

Chrysanthemum? nanum (Hook.): stem somewhat branched, clothed with loose deciduous wool; leaves pinnatifid; the segments linear and entire; heads terminal, solitary; achenia obovate-oblong, minutely papillose (receptacle naked, convex; rays 8–10, entire, apparently white; scales of the involucre elliptical.) *Hook. fl. Bor.-Am.* 1. *p.* 320.

North West Coast of America, *Menzies.*—A plant of doubtful genus, 3–5 inches high; the head about the size of a Daisy. *Hook.*

Div. 3. COTULEÆ & ARTEMISIEÆ, *DC.*—Receptacle naked (not chaffy.) Heads discoid, homogamous or heterogamous; the flowers all tubular; those of the disk perfect, but sometimes infertile.

154. AROMIA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 395.

Heads discoid, heterogamous; the flowers all tubular; the 4 or 5 marginal pistillate, with the corolla obliquely truncate and 2–3-toothed; the others

(10–12) perfect, with the corolla 5-toothed, nearly destitute of proper tube. Scales of the involucre 5 or 6, equal, concave-carinate, obovate, nearly in a single series, membranaceous. Receptacle convex, naked. Branches of the style truncate. Achenia of the ray and disk similar, quadrangular, tapering to the base, hairy on the angles. Pappus of about 12 oblong obtuse nerveless chaffy scales, distinct or slightly united at the base, much shorter than the achenia, but almost equalling the very short corolla.—An aromatic annual or biennial branching herb, nearly glabrous; the branchlets glutinous. Leaves linear; the upper alternate, entire; the lower (often opposite) trifid or somewhat pinnatifid; the lobes filiform-linear. Heads corymbose, small. Flowers yellow.

A. tenuifolia (Nutt.! l. c.)

St. Diego, California, near the coast, *Nuttall!* May.—Lower leaves 2–3 inches long. Heads turbinate, 2–3 lines in diameter: the corolla of the pistillate flowers not longer than the perfect, both very short. Achenia and pappus much as in Bahia and Chænactis.—Although placed by Nuttall in Anthemideæ, Div. Cotuleæ, this plant should rather find a place in the Subtribe Heleniеæ.

155. TANACETUM. *Linn.; Gærtn. fr. t.* 165; *DC. prodr.* 6. *p.* 127.

Heads discoid, homogamous, with the flowers all tubular and perfect, or heterogamous; the marginal flowers pistillate, in a single series, 3–4-toothed. Scales of the involucre imbricated, dry. Receptacle convex, naked. Achenia angled or ribbed, glabrous, with a large epigynous disk. Pappus either none or minute, membranaceous, coroniform, entire or toothed, often unequal. Herbs or suffruticose plants; with alternate variously dissected leaves, and solitary or corymbose (rather large) heads. Flowers yellow.

§ 1. *Heads (campanulate-hemispherical) heterogamous; the terete ray-flowers 3-toothed; the disk-flowers 5-toothed.*—Eutanacetum, DC.

1. *T. vulgare* (Linn.): stem herbaceous, erect, glabrous; leaves nearly glabrous, bipinnately parted; the rachis and lobes incisely serrate; corymb of numerous heads; inner scales of the involucre scarious at the apex, obtuse; pappus short, equal, 5-lobed. *DC.—Lam. ill. t.* 696, *f.* 1; *Engl. bot. t.* 1229; *Pursh, fl.* 2. *p.* 522; *Hook.! fl. Bor.-Am.* 1. *p.* 327; *Darlingt.! fl. Cest. p.* 492.

β. crispum (DC.): leaves more incised and crisped.

Naturalized abundantly in the Northern States! and Canada! July–Sept. ♃—*Tansey.*

§ 2. *Heads (hemispherical, the disk convex in fruit,) heterogamous; the ray-flowers obcompressed, 3–5-lobed or toothed, slightly winged at the base; the disk-flowers 5-toothed.*—Homalotes. (Omalanthus, *Less.*—Omalotes, *DC.*—Homalotes, *Endl.*)

2. *T. Huronense* (Nutt.): hairy or almost tomentose when young; stem stout, herbaceous, striate-angled; leaves bipinnately divided; the lobes oblong, pinnatifid-incised, or often nearly entire, mucronate with a callous point; heads (large) corymbose, or rarely nearly solitary, on stout peduncles;

inner scales of the involucre with brownish scarious margins; ray-flowers variable, often deeply cleft on the inside, with the rounded ligule slightly 3-toothed or 3-lobed, frequently with the limb 3–5-parted; pappus short, toothed.—*Nutt.! gen.* 2. *p.* 141, *& in trans. Amer. phil. soc. l. c. p.* 401. T.? camphoratum, *Less. in Linnæa*, 6 *p.* 521. T. Douglasii, *DC.! prodr.* 6. *p.* 128. T. boreale, *of the English gardens; Nutt. in trans. Amer. phil. soc. l. c.* Omalanthus camphoratus, *Less. syn. p.* 260; *Hook.! fl. Bor.-Am.* 1. *p.* 321. Omalotes camphorata, *DC. prodr.* 6. *p.* 83.

Shores of Lakes Huron and Superior! north to York Factory on Hudson's Bay! and west to Oregon! and California!—♃ A stout plant, 1–3 feet high; the heads much larger than those of T. vulgare; the disk strongly convex in fruit. Rays slightly exserted.

§ 3. *Heads (obovoid) heterogamous; the ray-flowers (about 5) truncate, 2–3-toothed; the disk-flowers 5-toothed; the central apparently infertile.*—SPHÆROMERIA, Nutt.

3. *T. capitatum:* cæspitose, suffrutescent, silky-canescent; leaves clustered on a branched caudex, cuneiform, 3–5-parted or pedate; those of the somewhat naked scapes nearly linear, entire or toothed at the apex; heads numerous, capitate; scales of the involucre scarious; pappus minute and irregular, denticulate, nearly obsolete in the disk-flowers.—Sphæromeria capitata, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 402.

Rocky Mountains, on a high hill, near the Red Butes of the Platte, towards its northern sources on the Sweet Water, *Nuttall!* June.—Plant growing in dense tufts; the scapes 3 or 4 inches high, terminated by the spherical cluster of heads. Corolla, especially of the exterior flowers, becoming enlarged and indurated at the base.—Odor agreeable, like that of Chammomile.

4. *T. Nuttallii:* somewhat cæspitose, silvery-canescent; leaves cuneiform, obtusely 3-lobed or toothed at the apex; the lower crowded on the branches of the woody caudex; the upper scattered on the flowering stems; heads few (3–5) in a terminal capitate cluster; scales of the involucre scarious; pappus very minute, in the disk-flowers obsolete.—Sphæromeria argentea, *Nutt.! l. c.*

Rocky Mountains, near the sources of the Platte and Colorado of the West, *Nuttall!* July.—Shrub 4–5 inches high. Leaves half an inch long. Flowers bright yellow.

‡ *Doubtful Species.*

5. *T. pauciflorum* (Richards.): stem simple, with a single terminal head, and sometimes another from the uppermost axil, longer than the bipinnate and tripinnatifid villous sessile leaves; the lobes narrow, rather obtuse; flowers all perfect. *Richards. appx. Frankl. journ. ed.* 2. *p.* 30; *Hook. fl. Bor.-Am.* 1. *p.* 327; not of *DC.*

Woody country, between lat. 54° and 64°, *Richardson.*—A foot high.

156. ARTEMISIA. *Linn.; Besser; DC. prodr.* 6. *p.* 93.

Heads discoid, few–many-flowered, heterogamous, with the central flowers perfect (either fertile, or sterile by the abortion of the ovary,) and 5-toothed, and the marginal pistillate in a single series, with a tubular 3-toothed corolla; or sometimes homogamous, with the flowers all perfect. Scales of the involucre imbricated, mostly dry and with scarious margins. Receptacle flattish or convex, naked or villous. Achenia obovoid, with a small epigynous disk, destitute of pappus.—Herbs or shrubby (bitter and mostly aromatic) plants; with alternate, usually pinnately cleft or dissected leaves, and small spicate or racemose heads; the spikes usually paniculate. Corolla yellow or purplish.

§ 1. *Receptacle naked: heads heterogamous; the disk-flowers sterile.*—DRACUNCULUS, Bess. (Oligosporus, *Less.*)

1. *A. pycnocephala* (DC.): suffruticose (ex *Bess.*); stems ascending or erect; leaves crowded, silvery-tomentose; the lower tripinnately divided, with linear lobes; the upper with somewhat ovate lobes; heads spicate or spicate-paniculate, crowded, hemispherical, many-flowered; scales of the involucre elliptical, rather obtuse, silky-villous, with broad scarious margins; sterile flowers hairy at the summit; the fertile glabrous.—*DC. prodr.* 6. *p.* 99; *Bess. in Linnæa*, 15. *p.* 102. Oligosporus pycnocephalus, *Less. in Linnæa*, 6. *p.* 524.

St. Francisco, California, *Chamisso*, fide *Besser*, *l. c.* Inadvertently given by De Candolle as a Siberian species.

2. *A. dracunculoides* (Pursh): perennial, mostly suffruticose, erect, branched, more or less canescently pubescent when young; cauline leaves narrowly linear, entire, or the lower, as well as the radical, often 3-cleft; heads small, globose, nodding, in paniculate racemes; scales of the involucre with scarious margins; the inner roundish, the outermost oblong.—*Pursh! fl.* 2. *p.* 742. A. Dracunculus, *Pursh*, *fl.* 2. *p.* 521. A. cernua, *Nutt.! gen.* 2. *p.* 143. A. dracunculoides var. glauca, *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 326. A. glauca β. fastigiata, *Bess. in DC. prodr.* 6. *p.* 97. A. inodora, *Hook. & Arn. bot. Beechey*, *p.* 150?

α. *tenuifolia:* canescent or glabrous; leaves elongated, narrowly linear, attenuate at both ends.—A. dracunculoides, *Pursh! l. c.* (fide spec. cult.)

β. *brevifolia:* somewhat cinereous, or at length glabrous (either herbaceous or suffruticose); leaves short, narrowly lanceolate-linear, acute; the lower cauline 3-cleft, the radical sometimes 1–2 pinnately parted?—A. Nuttalliana, *Bess. in Hook. l. c.*, *& in DC. l. c. p.* 96.

γ. *incana:* suffruticose, silky-canescent throughout when young, but becoming glabrous with age; cauline leaves short, linear, obtusish, frequently 3-cleft (inflorescence and flowers unknown).

Missouri! common from near St. Louis to the Rocky Mountains! and north to the Saskatchawan! (α. & β.) γ. Sandy banks of Jacques River, &c., *Mr. Nicollet!*—A somewhat polymorphous species, nearly allied in some of its forms to A. Dracunculus. Leaves varying from 1 to 4 inches in length, seldom more than one or two lines in width.—Both Pursh's name, and that imposed by Nuttall, seem to have been overlooked by Besser and De Candolle.

3. *A. borealis* (Pallas): perennial, herbaceous, cæspitose, silky-villous or nearly glabrous; stem simple; leaves all but the uppermost petioled; the radical linear-lanceolate, entire at the base, 3–5-cleft at the apex, or 1–2-pinnately parted, with the lobes lanceolate or linear; the cauline 2-pinnately divided, with linear lobes; the floral elongated, undivided at the base [often entire]; heads spicate or racemose, paniculate, hemispherical; scales of the involucre elliptical, colored on the back. *Bess. in Hook. & DC.*—*Pall. itin.* 3, *t. Hh. f.* 1; *Less. in. Linnæa*, 6. *p.* 211; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 30; *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 326; *DC.! prodr.* 6. *p.* 98.

β. Besseri: cinereous-silky; leaves all linear-lanceolate; heads villous externally, the lower pedicellate. *Bess.*—A. borealis, *α.* Purshii, *Bess. in DC. l. c.*, excl. syn. *Pursh.*

γ. Wormskioldii (Bess. l. c.): canescent and somewhat silky; leaves on short petioles; heads racemose; corolla a little hairy at the summit.—A. Grœnlandica, *Wormsk. fl. Dan. t.* 1585.

δ. spithamæa: either villous or pubescent when young, at length glabrous; cauline and floral leaves either 3–5-cleft, or linear and entire; heads spicate-racemose.—A. borealis *β.* Adamsii (leaves 3–5-cleft; peduncles hairy), *&* ν. Schangini (cauline leaves entire and linear), *Bess. in DC. l. c.* A. spithamæa, *Pursh! fl.* 2. *p.* 522. (At length glabrous throughout; cauline and floral leaves linear, entire!)

Arctic America! from Greenland! (var. *γ.*) and Labrador! (*δ.*) to the North West Coast! the Rocky Mountains! and Oregon! Also Keweena Point, Lake Superior, *Dr. Houghton!*—A span high.

4. *A. Canadensis* (Michx.): perennial (or biennial?), glabrous or canescent; radical and lower cauline leaves 2-pinnately divided, petioled; the upper 3–7-divided, sessile; the segments linear or linear-lanceolate; heads (rather large) hemispherical or subglobose, in paniculate racemes; scales of the involucre ovate or oval, with scarious margins.—*Michx.! fl.* 2. *p.* 129; *Nutt.! gen.* 2. *p.* 144. A. campestris, *Pursh, fl.* 2. *p.* 521 (ex *Nutt.*); *Richards. appx. Frankl. journ. ed.* 2. *p.* 30. A. desertorum, *γ–η*, *Bess.! in Hook. l. c.* A commutata, *Bess. in DC. l. c.* (at least as to the American plant.) A. peucedanifolia, "*Juss. herb.; Bess. Drac. n.* 33;" *DC.! l. c.* A. Pacifica, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 399.

Shores of the Great Lakes, from the St. Lawrence River to Lake Superior! and west to Missouri! Upper Platte! and Oregon! extending north to Hudson's Bay! and to the Arctic Circle.—Plant 1–2 or 3 feet high, erect or ascending, considerably variable, if all the Western forms really belong to this species; sometimes nearly glabrous except the young radical leaves; but frequently silky-canescent throughout; the leaves somewhat rigid. The heads also vary in size, but are larger than the following species.

5. *A. caudata* (Michx.): biennial? glabrous; stem erect, paniculate; upper cauline leaves pinnately, the lower and radical (often pubescent) 2–3-pinnately divided; the segments linear-setaceous, divaricate; racemes disposed in a strict elongated panicle; heads (small) erect, subglobose; exterior scales of the involucre ovate; the inner elliptical, scarious.—*Michx.! fl.* 2. *p.* 129; *Nutt.! gen.* 2. *p.* 144; *Ell. sk.* 2. *p.* 318; *DC. l. c.*

Barren woods and sandy soil, Illinois! and Missouri, and from the coast of New Hampshire! and New Jersey! to Georgia! Aug.–Sept.—Plant 2–6 feet high, strict.

6. *A. Lewisii:* herbaceous; leaves on the sterile stems crowded, sessile, bipinnately divided, villous (the pubescence deciduous?); the segments linear-filiform, spreading, entire or often 2–3-parted; heads small, few-flowered, in a large open panicle; involucre glabrous.—A. Santonica, *Pursh, fl.* 2. *p.* 521. A. variabilis *γ*? Americana, *Bess. in DC. prodr.* 6. *p.* 94, *& in Linnæa,* 15, *p.* 94 *&* 111.

Missouri, *Lewis.* (also *herb. Michaux.*) Sandy places between Fort Gibson and Fort Smith, Arkansas, *Dr. Engelmann!*—The specimen of Dr. Engelmann consists of a young leafy stem, and a panicle of the former year. The leaves of the former are not unlike those of A. caudata, but villous; those of the latter are small, pinnately 3–5-divided, glabrous; the segments setaceous. Involucre apparently glabrous; the inner scales ovate, with scarious margins.

7. *A. filifolia* (Torr.): canescent; stems very numerous from a thick woody base, paniculate at the summit; leaves much crowded or fascicled,

filiform; the lower mostly 3-parted; heads very small, crowded in virgate leafy panicles, tomentose, 3–4-flowered; two of the flowers pistillate and fertile; the others staminate and sterile; receptacle slightly fimbrillate-pilose.—*Torr.! in ann. lyc. New York*, 2. *p*. 211. A. Plattensis, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 397.

Plains of the Platte, very abundant, *Dr. James! Nuttall! Lieut. Fremont!* July–Aug.—Plant 1–3 feet high; the branches slender and virgate. Leaves 1–2 inches long, terete (revolute), very slender, white when young, becoming somewhat glabrous when old.

§ 2. *Receptacle naked: heads homogamous; the flowers all perfect and fertile.*—SERIPHIDIUM, Bess.

8. *A. cana* (Pursh): shrubby, much branched, densely canescent throughout; leaves linear-lanceolate, acute, flat, entire (the lowermost cuneiform and sometimes acutely 3-lobed), equally clothed with the close silky tomentum on both sides; heads obovoid-hemispherical, axillary, sessile, mostly glomerate or spicate-paniculate, 4–6-flowered; exterior scales of the involucre canescent; the inner scarious.—*Pursh! fl.* 2. *p*. 621; *Bess.! in Hook. l. c.*; *DC. prodr.* 6. *p*. 105. A. Columbiensis, *Nutt.! gen.* 2. *p*. 142, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 398, excluding the habitat in part.

Plains of the Upper Missouri and Platte to the Rocky Mountains, *Lewis! Nuttall! Mr. Nicollet! Lieut. Fremont!* and plains of the Saskatchawan, *Drummond!*—The leaves of this well-marked species are very seldom in any degree lobed, although there are some obscure indications in Pursh's specimens, collected by Lewis. We believe it has not been found west of the Rocky Mountains; and Mr. Nuttall was mistaken in supposing it to be the "Wild Sage" of Lewis and Clarke's Travels, which so abounds in the woodless sterile plains of the interior of Oregon; so that the change of specific name was the more unwarrantable. The name of *Wild Sage* was doubtless applied indiscriminately to several of the ensuing shrubby species, which inhabit the region in question. But the plant given to Pursh by Lewis with this name is the A. integrifolia, *Pursh* (A. Ludoviciana, *Nutt.*), and was collected on the bluffs of the Missouri, Oct. 1, 1804, upon the homeward journey.

9. *A. tridentata* (Nutt.): shrubby, much branched, densely silvery-canescent; leaves crowded or fascicled, narrowly cuneiform, 3-toothed or 3-cleft at the apex, the teeth or short lobes obtuse and approximate; those of the flower-branchlets often linear and entire; heads obovoid, spicate-glomerate, disposed in dense compound panicles, 5–6-flowered; exterior scales of the involucre canescent, the inner scarious.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 398. (from specimens not in flower.)

Plains of the Oregon and Lewis River (Rocky Mountains in herb.), *Nuttall!* Wind River Chain of the Rocky Mountains, *Lieut. Fremont!* Aug.—Shrub about a foot high, much branched. Leaves an inch or less in length, 3–4 lines wide at the apex, tapering to the base, both sides equally silvery-tomentose; the teeth or lobes either very short, or 2–4 lines long, seldom again toothed. Heads very numerous, smaller than in A. cana.

10. *A. arbuscula* (Nutt.! l. c.): dwarf, shrubby, tomentose-canescent; leaves short, cuneiform, 3-cleft; the lobes oblong, obtuse; the lateral often 2–3-lobed; heads globose-ovoid, 6–10-flowered, sessile, solitary or somewhat clustered, forming a slender interrupted spike or spicate panicle; scales of the involucre oval; the exterior tomentose, the inner scarious.

Arid plains of Lewis River, *Nuttall!*—Shrub 4–6 inches high; the flowering branches virgate and rather naked.

11. *A. trifida* (Nutt.! l. c.): shrubby, silky-canescent; leaves 3-parted towards the apex; the segments linear, obtuse; heads spicate, somewhat glomerate, in a simple panicle, obovoid, 8-flowered; exterior scales of the involucre ovate, canescent; the inner oblong, glabrous, with scarious margins.

β. rigida (Nutt.! l. c.): leaves rigid, more silky and shining; the segments rather acute.

Plains of the Rocky Mountains and Oregon, *Nuttall!*—Plant 6–8 inches high.

§ 3. *Receptacle naked (not hairy): heads heterogamous; the flowers all fertile.* —ABROTANUM, (Tourn.) Bess.

* *Perennial or shrubby.*

12. *A. Lindleyana* (Bess.): shrubby, canescent towards the summit; leaves nearly linear, canescently tomentose beneath; heads spicate-paniculate, somewhat hemispherical, erect; scales of the involucre canescent, scarious at the apex, the outermost foliaceous; corolla glabrous. *Bess. in Hook. l. c., & DC. l. c.*

a. legitima (Bess. l. c.): leaves entire, an inch to an inch and a half in length.

β. brevifolia (Bess. l. c.): leaves an inch long, in fascicles; the primary having probably fallen away.

γ. subdentata (Bess. l. c.): leaves linear-lanceolate, somewhat toothed at the apex; involucre white and tomentose.

δ. Coronopus (Bess. l. c.): leaves pinnatifid-toothed towards the apex.—A. pumila, *Nutt.?*

"North West Coast of America, *Douglas*, in *herb. Lindl.*", ex *Besser*. Probably from the interior of Oregon.—This species is unknown to us: perhaps the following, of which we have only seen an imperfect specimen, is one of its forms.

13. *A. pumila* (Nutt.): dwarf, herbaceous, perennial, slightly tomentose-pubescent; leaves scattered, linear, entire, or sparingly laciniate or incised towards the apex; heads sessile, subglobose, few, in a simple somewhat leafy spike; scales of the involucre scarious, slightly tomentose; the exterior ovate, the inner broadly oval; "flowers polygamous."—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 399.

Lewis River, in the Rocky Mountains.—Stems simple, 6–8 inches high, from a somewhat woody base. Leaves an inch or more in length, scarcely a line wide; the teeth or lobes (one or two on each side) subulate. *Nutt.*

14. *A. pedatifida* (Nutt.! l. c.): dwarf, suffruticose, somewhat canescent or cinereous, cæspitose; leaves 3-parted; the lateral segments often 2–3-cleft, linear, obtuse; heads obovoid, sessile, bracteate, seldom clustered, few, in a simple spike; scales of the involucre ovate, pubescent, with shining scarious margins; corolla glabrous.

Arid plains of Lewis River, in the Rocky Mountains, *Nuttall!* Aug.—"A very distinct and peculiar species, with a stout woody root, sending out tufts of low stems, three or four inches high, terminating in spikes of 4–10 flowers." *Nutt.* = [illegible]

15. *A. longifolia* (Nutt.): herbaceous (frequently woody at the base), tomentose; flowering stems simple; leaves narrowly lanceolate-linear, elongated, acute, entire, with revolute margins, tomentose-canescent beneath, at length almost glabrous above; the lower occasionally 3–5-cleft or laciniate; the lobes linear; heads cylindric-ovate, somewhat glomerate, sessile, few-flowered; involucre tomentose.—*Nutt.! gen.* 2. *p.* 142, *& in trans. Amer. phil. soc. l. c.;* not of *Bess. in Hook. l. c. &c.*

Rocky situations on the Missouri from White River to the mountains, *Nuttall!* Mouth of Teton River, *Mr. Nicollet!*—A low, "very odorous" species; the leaves 3–4 inches long, 2–3 lines wide, tapering to an acute point.

16. *A. discolor* (Dougl.): suffruticose, erect or ascending; leaves somewhat bipinnatifid, canescently tomentose beneath; the lobes mostly linear, acute, with revolute margins, few and divergent; heads hemispherical, nodding, disposed in a virgate raceme; scales of the involucre scarious, oblong, the outermost lanceolate; corolla glabrous.—*Dougl.! in herb. Hook.; DC. prodr.* 6. *p.* 109. A. Ludoviciana, *Bess.! in Hook. l. c.*, not of *Nutt.*

Rocky Mountains towards Arctic America, *Richardson!* and interior of Oregon near the Spokan and Kettle Falls, *Douglas.*—Plant 8–12 inches high. Involucre at first tomentose, but at length almost glabrous.—There are two forms; one (from Richardson?) with the upper surface of the leaves more tomentose, and more slender lobes; the other, with the leaves almost glabrous above, and with the lobes shorter and broader.

17. *A. Ludoviciana* (Nutt.): perennial, canescently tomentose throughout, branched; leaves lanceolate, mucronate, both surfaces when young clothed with a white tomentum, beneath very densely so; the lower often incised, remotely and sharply serrate, or sparingly pinnatifid; the upper entire; heads ovoid, mostly sessile, erect, disposed in a strict leafy panicle; corolla glabrous.—*Nutt.! gen.* 2. *p.* 143; *DC. prodr.* 6. *p.* 110; *Bess.! in Linnæa*, 15. *p.* 104. A. integrifolia, *Pursh! fl.* 2. *p.* 520. A. Purshiana *β.* angustifolia, *Bess.! in Hook. l. c.; DC. l. c.*

β. latiloba (Nutt.): lower leaves dilated, deeply pinnatifid, or the upper trifid; the lobes and the upper leaves broadly lanceolate (pubescence of the upper surface deciduous).—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 400.

γ. gnaphalodes: very tomentose-canescent throughout; leaves elongated lanceolate, entire, or sharply and irregularly serrate towards the apex.—A. gnaphalodes, *Nutt.! gen.* 2. *p.* 143; *DC.! prodr.* 6. *p.* 115.

δ. serrata: leaves lanceolate (pretty large), acute or acuminate, sharply but irregularly serrate from the middle to the apex, perfectly glabrous above, at least when old; heads becoming glabrous; otherwise exactly as in var. *γ.*—A. serrata, *Nutt.! gen.* 2. *p.* 142. (*herb. Lamb.! & herb. acad. Philad.!*)

ε. latifolia: tomentose-canescent throughout: leaves short, elliptical-lanceolate or somewhat cuneiform-oblong, usually very entire.—A. Purshiana *α.* latifolia, *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 323; *& in DC. l. c.* A. integrifolia, *Richards. appx. Frankl. journ. ed.* 2. *p.* 30.

Plains and dry banks of rivers, &c., from the shores of Lakes Huron! and Michigan! the Saskatchawan! Missouri! &c. west to the Rocky Mountains! and south to Texas! *β.* Rocky Mountains, *Nuttall!* Oregon, *Dr. Scouler!* (mentioned by Hooker under A. longifolia, *Bess. in Hook. fl. Bor.-Am.*) *γ. & δ.* Upper Great Lakes! Upper Mississippi! and Missouri! *ε.* Plains of the Saskatchawan, *Richardson! Drummond!* Wind River Chain of the Rocky Mountains, *Lieut. Fremont!* Aug.–Sept.—Plant 1–5 feet high, sometimes simple, variable as to the shape and size of the leaves, but all the forms passing into each other; with small and crowded, rather few-flowered, more or less tomentose heads. The broader leaves are more or less evidently feather-veined.

18. *A. Douglasiana* (Bess.): suffruticose? strict, canescent; leaves canescent beneath; the cauline lanceolate, acute, entire; heads spicate-paniculate, hemispherical; the panicle somewhat leafy; scales of the involucre elliptical; the inner scarious at the apex; corolla glabrous. *Bess. in Hook. l. c., & DC. l. c.*

Oregon, *Douglas.*—Differs from A. integrifolia by its wholly entire leaves, large panicle, with smaller glomerate-spicate heads: from A. Purshiana [that is A. Ludoviciana] in its strict stem, acuminate (not mucronate) leaves, elongated branches of the panicle, larger heads, the involucre not canescent-tomentose, the whole plant less canescent, and the leaves green above. *Bess.* —We have a plant collected by Douglas, which accords with the above character, except that the upper surface of the leaves and the heads are clothed with a loose, woolly, but apparently deciduous pubescence.

19. *A. vulgaris* (Linn.): perennial, erect; leaves whitish-tomentose beneath: the cauline pinnatifid, with the lobes either laciniate, incised, coarsely serrate, or entire; the uppermost nearly linear and entire; heads spicate-paniculate, ovoid, nodding, at length erect; the panicle leafy and spreading; exterior scales of the involucre canescently tomentose; the inner scarious; corolla glabrous. *Bess.! in Hook. l. c., & DC. l. c.—Linn. spec.* 2. *p.* 848; *Engl. bot. t.* 978; *Michx.! fl.* 2. *p.* 128; *Pursh, fl.* 2. *p.* 522; *Nutt. gen.* 2. *p.* 144; *DC.! prodr.* 6. *p.* 112. A. heterophylla, *Nutt.! in trans. Amer. phil. soc. l. c.*—A dozen varieties of this polymorphous and widely diffused species are described by Besser and De Candolle; of which the American forms are,

α. vulgatissima (Bess. l. c.): lobes of the leaves linear-lanceolate, the lower scarcely incisely toothed; panicle ample, erect.

β. Kamtschatica (Bess. l. c.): cauline leaves bipinnatifid, with linear lobes, those of the lower ones toothed; spikes dense, branched at the base; the spikelets nodding; heads ovate; scales of the involucre with scarious margins, smooth and shining.

γ. Californica (Bess. in Linnæa, 15. p. 91), which is said to represent the opposite extreme, and to connect A. integrifolia with this species; the lower leaves being merely unequally 3-cleft.—A. integrifolia, *Less. in Linnæa, l. c.; Hook. & Arn. bot. Beechey, p.* 150.

δ. Mexicana: lower leaves pinnatifid, the upper trifid; the lobes, like the uppermost leaves and those of the branches, linear-lanceolate, very acute, entire, with revolute margins; the upper surface as well as the branches often canescent when young; heads small, tomentose-canescent; flowers fulvous.—A. Mexicana, *Willd.? DC. l. c.?* (*Cf. Bess. in Linnæa,* 15. *p.* 107.) A. vulgaris var. Americana, *Bess. in Linnæa, l. c. p.* 105, in part. (spec. *Engelm.*)

Waste places, var. *α.* (*Mugwort*) introduced from Europe, and more or less naturalized; but native in British America. From Vermont (*Dr. Robbins!*) we have a state with the leaves all pinnatifid, and the lobes broad and mostly obtuse; apparently like the plant described by Nuttall, from sequestered forests of North Carolina. *β.* Unalaschka, &c. *γ.* California, *Chamisso.* *δ.* Arkansas, *Dr. Engelmann! Dr. Leavenworth!* Texas, *Drummond! Dr. Riddell! Berlandier?*—The A. vulgaris, *Bess. in Hook. l. c.*, from Arctic America, and subsequently indicated as var. Americana, we cannot distinguish from A. Tilesii.

20. *A. Tilesii* (Ledeb.): perennial, erect; stem simple; leaves whitish-tomentose beneath, pinnatifid [or trifid]; the lobes lanceolate, acuminate, somewhat toothed; heads racemose-paniculate, crowded, globose, somewhat nodding; branches of the panicle short; scales of the involucre arachnoid-tomentose, scarious; corolla glabrous. *Bess.! in Hook. l. c., & DC. l. c.—Ledeb. in mem. acad. St. Petersb.* 5. *p.* 568; *Less. in Linnæa,* 6. *p.* 214; *Bess. in Linnæa,* 15. *p.* 106.

β. arctica (Bess. l. c.): leaves laciniate-pinnatifid; the lobes entire, short, obtuse; involucre pale, scarcely woolly when old.

γ. Unalaschkensis (Bess. in Linnæa, l. c.): leaves mostly deeply trifid; the middle segment very much larger than the lateral; all lanceolate, acute, slightly and unequally toothed [often entire]; flowers purplish-brown.

δ. elatior: leaves as in γ.; the lobes entire; heads as in β., smoothish, in numerous more or less elongated racemes, forming an ample virgate-pyramidal panicle.—A. vulgaris, *Bess.! in Hook. l. c.*, in part. A. Indica β. Canadensis, *Bess. l. c.?* A. vulgaris ββ. Americana (as to the Northern plant), *Bess. in Linnæa*, 15. *p.* 105.

Arctic shores of Asia and America! to Unalaschka! *δ.* Subarctic America, *Richardson!*—A polymorphous plant, with larger (frequently 3 lines in diameter), more globose and racemose heads, and more scarious involucres than any form of A. vulgaris.

21. *A. Hookeriana* (Bess.): suffruticose, erect: leaves with their lower surface as well as the stem canescent; the cauline pinnatifid, their lobes, like the floral leaves, lanceolate, acute; heads globose, nodding, in a terminal thyrsoid and scarcely leafy panicle; scales of the involucre woolly, with scarious margins; the inner rounded. *Bess. in Hook. l. c., & DC. l. c.*

Rocky Mountains, *Drummond.*—Heads 1½–2 lines long. Corolla purplish. Resembles a form of luxuriant A. vulgaris. *DC.*

22. *A. Michauxiana* (Bess.): herbaceous, erect; stem simple; leaves whitish-tomentose beneath, pinnatifid; the lobes of the lower ones incisely toothed, of the upper and also the floral leaves linear-lanceolate; heads racemose, globose, nodding; scales of the involucre glabrous, with the sides scarious and shining; corolla glabrous. *Bess. in Hook. l. c., & DC. l. c.*

Rocky Mountains, and on the Oregon, *Douglas.*—Plant with the aspect of A. vulgaris var. Mongolica. Raceme sometimes simple, sometimes branched at the base. *DC.*

23. *A. incompta* (Nutt.): herbaceous, glabrous, except the lower surface of the pinnatifid leaves, which is cinereous; their lobes (3–5) linear-oblong, entire (the lateral sometimes toothed ?); heads subglobose, racemose-paniculate, erect, on short pedicels: scales of the involucre glabrous and shining, scarious; the exterior ovate; corolla glabrous.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 400.

Central chain of the Rocky Mountains, in Thornberg's Pass (about lat. 41°), *Nuttall!*—Plant 1–2 feet high. Remarkable for its smoothness; at first sight somewhat resembles some varieties of A. vulgaris, but is very distinct. *Nutt.*—Perhaps the same as the preceding, which is unknown to us.

24. *A. pachystachya* (DC.): suffruticose (herbaceous, *Nutt.*), woolly-sericeous throughout; stems simple; cauline leaves crowded and also fascicled in the axils, bipinnately divided, or simply pinnate and as if stipulate at the base; the lower pinnæ scattered, those at the apex crowded; lobes short, narrowly linear-lanceolate; heads subglobose, glomerate-spicate; the spikes crowded in a long spicate panicle, bracteate at the base; scales of the involucre ovate, villous on the back; the inner scarious; corolla glabrous.—*DC.! prodr.* 6. *p.* 114; *Nutt. in trans. Amer. phil. soc. l. c.* (under the name of A. pycnostachya.)

California, *Douglas!* Coast of Monterey, *Nuttall.*—The crowded panicle 1–2 feet long, composed of short sessile spikes. Heads 15–20-flowered.

25. *A. Richardsoniana* (Bess.); cæspitose; leaves somewhat silky [canescent]; the radical on long petioles, and with the lower cauline pinnately divided; the upper 3-cleft; lobes of the radical leaves 3–5-cleft, of the upper undivided, linear, obtuse; heads racemose-spicate, glomerate, globose; peduncles woolly at the summit; scales of the involucre fuscous, scarious, woolly on the back; corolla a little hairy at the summit (varies with the peduncles strict, and with the heads somewhat nodding). *Bess.! in DC. prodr.* 6. *p.* 117. A. arctica, *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 323, not of *Less.* A. cæspitosa, *Bess. in Hook. l. c.?*

From Bear Lake to the shores of the Arctic Sea, *Richardson!* Mt. Ranier, Oregon, *Mr. Tolmie!*—Plant 4–6 inches high. The corolla is nearly glabrous in our arctic specimens, but decidedly hairy at the summit in that from Mount Ranier; in which the raceme is loose, the pedicels strict, but the heads a little nodding.

26. *A. Prescottiana* (Bess.): suffruticose, branched; leaves canescent beneath, with revolute margins, pinnatifid or trifid; the divergent lobes and uppermost leaves linear-filiform; heads spicate, globose, nearly erect; scales of the involucre with scarious margins, shining, scarcely pubescent; corolla glabrous. *Bess. in Hook. l. c., & DC. l. c.*
Oregon, *Douglas.*—Lower leaves 1½–2 inches long. *DC.*

27. *A. arctica* (Less.): herbaceous; stem simple; leaves nearly glabrous; the lower bipinnatifid, (petioled); the lobes linear-lanceolate, incisely toothed; heads large, globose, racemose, nodding; the apex of the peduncles and the base of the corolla hairy; scales of the involucre ovate-lanceolate, scarious, brown or blackish. *DC.! l. c.—Less.! in Linnæa*, 6. *p.* 213; *Hook. & Arn.! bot. Beechey, p.* 125; not of *Bess.* A. Chamissoniana, *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 324.
Arctic coast, *Richardson!* to Kotzebue's Sound! and Unalaschka! Woods in the Rocky Mountains, lat. 52°, *Drummond.*—According to Hooker, the specimens from the last-named locality are identical with A. Norwegica.

28. *A. glomerata* (Ledeb.): suffruticose, cæspitose, silky with white hairs; leaves on the simple tufted stems 3-parted and many-cleft; the upper cauline and the bracts cuneiform or oblong, pinnatifid; heads corymbose-capitate, globose, bracteate; scales of the involucre ovate-lanceolate, sphacelate, unequally toothed at the apex, whitish on the back; corolla hairy only at the summit. *DC.! l. c.—Ledeb. in mem. acad. St. Petersb.* 5. *p.* 564; *Less.! in Linnæa*, 5, *p.* 212; *Bess.! in Hook. l. c.*
Kotzebue's Sound, fide *Hook. & Arn.! bot. Beechey, p.* 125: but we doubt whether the sterile tufts (which alone were collected), with densely imbricated, very villous, cuneiform, 3–5 cleft leaves, really belong to this species.

29. *A. globularia* (Cham. herb.): suffruticose at the base, cæspitose; stems simple, hirsute at the summit; leaves petioled, silky beneath, 3-parted; the lobes 3-cleft or entire, linear; heads racemose-capitate, globose; scales of the involucre oblong-lanceolate, woolly on the back, sphacelate at the apex; corolla glabrous.—*Bess. in DC. prodr.* 6. *p.* 116.
Unalaschka, &c., *Chamisso!*—Stems 3–5 inches long from a woody caudex. Involucre blackish. Corolla purple. *DC.*

* * *Biennial.*

30. *A. biennis* (Willd.): herbaceous, strict, glabrous; radical and lower cauline leaves bipinnately parted; the uppermost pinnatifid; the lobes linear, acute; those of the lower leaves sharply toothed or incised, of the upper mostly entire; heads globose, erect, spicate; the short spikes disposed in a strict leafy panicle.—*Willd. spec.* 3. *p.* 1842; *Pursh! fl.* 2. *p.* 522; *Nutt.! gen.* 2. *p.* 144; *Bess.! in Hook. l. c.*; *DC.! prodr.* 6. *p.* 120. A. annua? *Nutt. l. c.*
Ohio! Illinois! Tennessee! and Missouri! to the Upper Platte! Saskatchawan! and the Mackenzie River! Aug.–Oct.—Plant 1–3 feet high.

§ 5. *Receptacle villous (or naked?): heads as in* § Abrotanum: *achenia acutely ribbed, crowned with a minute squamelliform pappus!*—TANACEUM, Nutt.

31. *A. Californica* (Less.): shrubby, pubescent-canescent; leaves pinnately 5–7-divided, with very narrowly linear segments, which are rarely 2–3-cleft; the uppermost entire; heads in a simple or compound raceme, secund, nodding, on short pedicels, hemispherical; scales of the involucre elliptical, obtuse, with broad scarious margins, almost glabrous; corolla glabrous. *Less. in Linnæa*, 6. *p.* 523 (whence the above character is derived); *Hook. & Arn. bot. Beechey, p.* 150; *Bess. in Linnæa,* 15. *p.* 93 & 109. A. abrotanoides, *Nutt. in trans. Amer. phil. soc. l. c. p.* 399, ex char.

California, *Chamisso, Capt. Beechey.* At St. Barbara, *Nuttall*; where it is said to be common, to have much the appearance of A. Abrotanum, the branches canescent, the heads large, and the receptacle somewhat hairy.—De Candolle has omitted this species. Besser, who has recently examined the original specimens (*Linnæa, l. c.*), pronounces the plant a congener and near ally of his A. Fischeriana, differing only in the division of the leaves. He adds that the ovary is acutely 4–5-ribbed, one of the ribs winged, and the rather large disk crowned with 4 or 5 short membranaceous squamellæ.

32. *A. Fischeriana* (Bess.): shrubby, subcanescent; lower leaves biternately divided; the upper 3-cleft; segments filiform; uppermost leaves entire; heads racemose, secund, nodding, hemispherical; scales of the involucre ovate-elliptical, with scarious margins; corolla glabrous. *Bess. Abrot.*, & *in DC. prodr.* 6. *p.* 105.

β. vegetior (Bess. l. c.): leaves simply ternately divided; scales of the involucre all nearly glabrous.—A. foliosa, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 397.

"St. Francisco, California.—Shrub 3 feet high, decumbent." *Besser, l. c.* who, under var. *β.*, remarks that the receptacle bears a dense wool, longer than the involucre; and that the acutely ribbed achenia are terminated by a membranaceous and somewhat lobed pappus; the epigynous disk therefore large, as in Tanacetum. Mr. Nuttall's plant (not in flower) is from Monterey. The leaves have smaller ones fascicled in the axils; which is said by Lessing to be the case in A. Californica.

§ 6. *Receptacle villous or hairy: heads heterogamous; the flowers all fertile: achenia not ribbed: pappus none.*—ABSINTHIUM, (Tourn., Gærtn.) Bess.

33. *A. Absinthium* (Linn.): suffruticose, erect, silky-canescent; leaves 2–3 pinnately parted; the lobes lanceolate, often incised, obtuse; heads hemispherical, racemose-paniculate, nodding; exterior scales of the involucre linear or lanceolate, silky; the inner broad, rounded, scarious.—*Engl. bot. t.* 1230; *Darlingt. fl. Cest. p.* 491; *DC. prodr.* 6. *p.* 125; *Oakes, cat. pl. Vermont, in Thompson, gazetteer.* Absinthium vulgare, *Lam.*; *Gærtn. fr. t.* 164.

Road-sides, naturalized in the Northern States! Also in Newfoundland, *DC.*—Bitter and odorous.—*Wormwood.*

34. *A. frigida* (Willd.): suffruticose, silky-canescent; cauline leaves pinnately divided; the segments linear, 3–5-cleft; heads small, racemose-paniculate, globose, nodding, exterior scales of the involucre canescent; the inner woolly, oblong; corolla glabrous. *DC.! l. c.*—*Willd. spec.* 3. *p.* 1838; *Ledeb. fl. Alt.* 4. *p.* 63, & *ic. Alt. t.* 462; *Bess.! in Hook. fl. Bor.-Am.* 1. *p.* 321.

δ. Gmelinana (Bess.! l. c.): branched fromthe base; lower pinnæ of the leaves simple and remote from the others, resembling stipules; segments narrowly linear.—A. frigida, *Pursh! fl.* 2. *p.* 521. A. sericea, *Nutt.! gen.* 2. *p.* 143. A. virgata, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 30. Absinthium incanum, &c., *Gmel. fl. Sibir.* 2. *p.* 128, *t.* 62.

Dry hills and rocks, Saskatchawan! and Missouri! to the Rocky Mountains, (Wind River Chain, at the altitude of 7000 feet, *Lieut. Fremont!*) and the Snake Country, *Mr. Tolmie*, (*Hook. & Arn.*) July–Aug.—Stems diffuse, 8–12 inches high.

A. Chinensis (or rather A. lagocephala, *Fisch.*) a plant of Siberia and Kamtschkatca, is probably incorrectly given by Pursh as a native of the North West Coast of America.

Div. 4. HIPPIEÆ, *Less.*—Receptacle naked. Heads monœcious; the pistillate flowers in the margin, the staminate in the centre. Style of the sterile flowers simple, truncate. Pappus none.

157. SOLIVA. *Ruiz & Pav. prodr. p.* 113, *t.* 24; *R. Br. in Linn. trans.* 12. *p.* 101; *DC. prodr.* 6. *p.* 142.

Heads many-flowered; the fertile flowers in several series, apetalous or nearly so; the staminate few in the centre, with a 3–6-toothed corolla. Scales of the involucre 5–10, in a single series. Receptacle flat, naked. Achenia obcompressed, with winged or callous margins, armed with the persistent rigid style, destitute of pappus.—Small depressed herbs (chiefly South American); with petioled pinnately divided leaves, and small sessile or rarely pedunculate heads.

1. *S. nasturtiifolia* (DC.): very low and depressed; leaves on short petioles, pinnately parted; the lobes 3–4 on each side, obtuse, entire; heads sessile; achenia cuneiform, villous at the apex, the callous margin tuberculate-rugose throughout. *DC. prodr.* 6. *p.* 142. Gymnostyles nasturtiifolia, *Juss. in ann. mus.* 4. *p.* 262, *t.* 61, *f.* 2. G. stolonifera? *Nutt.! gen.* 2. *p.* 185; *Ell.! sk.* 2. *p.* 473.
Damp sandy soils, in South Carolina, near the coast: perhaps introduced. This species is a native of Buenos Ayres, where it was collected by Commerson.—♃? *Ell.* (Feb.–May.) Angles of the achenium somewhat produced into spreading teeth.

2. *S. daucifolia* (Nutt.): hirsute-pubescent, diffuse; leaves bipinnately divided; the divisions crowded, mostly 3-parted; the lobes linear, acute; heads sessile; achenia obovate, minutely hairy throughout, slightly margined, even, minutely 2-toothed at the summit; the teeth incurved.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 403.
Dry grassy downs within the limits, and in the immediate vicinity of St. Barbara, California, *Nuttall!*—About 2 inches high. Annual, according to Nuttall.

Subtribe 7. GNAPHALIEÆ, *Less.*, *DC.*—Heads homogamous or heterogamous, discoid; the flowers all tubular; the pistillate mostly filiform. Anthers caudate at the base! Style in the perfect flowers with the branches not appendiculate; in the staminate mostly undivided. Pappus composed of capillary or setaceous bristles, or sometimes none.—Leaves mostly alternate.

CONSPECTUS OF THE GENERA.

* *Receptacle not chaffy.*

158. **GNAPHALIUM.** Heads heterogamous; the central flowers perfect, the marginal filiform. Pappus all capillary.

159. **ANTENNARIA.** Heads diœcious. Pappus of the sterile flowers clavate or thickened at the apex.

* * *Receptacle chaffy, except in the centre.*

160. **FILAGO.** Heads heterogamous; the exterior flowers pistillate, filiform, subtended by the chaff of the receptacle (which is similar to the scales of the involucre), destitute of pappus; the central furnished with pappus.

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158. GNAPHALIUM. *Linn.* (excl. spec.); *Don, in trans. Wern. soc.* 5. *p.* 263; *Endl. gen. p.* 447.

Heads many-flowered, heterogamous; the flowers all tubular; the exterior pistillate, very slender, mostly in several series; the central perfect. Scales of the involucre imbricated, appressed, scarious or somewhat hyaline. Receptacle flat, naked. Style 2-cleft. Achenia somewhat terete, or more or less obcompressed. Pappus a single series of setiform or capillary scabrous bristles.—Herbs, or rarely suffruticose plants, mostly woolly or tomentose; with sessile or decurrent leaves, and glomerate, corymbose, or spicate heads. Scales of the involucre variously colored.

§ 1. *Pistillate flowers in several series, frequently more numerous than the perfect: achenia somewhat terete.*—EUGNAPHALIUM, DC.

* *Leaves decurrent: scales of the involucre not yellow.*

1. *G. decurrens* (Ives): stem stout, branched at the summit, clothed with a viscid pubescence; leaves linear-lanceolate, partly clasping, decurrent, mucronate-acute, granular-viscid and slightly scabrous above, the lower surface like the branches densely whitish-tomentose; heads subsessile, in dense corymbose clusters, on short leafy and very woolly branches; the scales of the yellowish-white scarious involucre oval, rather acute; achenia minutely scabrous.—*Ives! in Sill. jour.* 1. *p.* 380, *t.* 1; *Torr.! compend. p.* 288; *Beck! bot. p.* 178; *Hook. fl. Bor.-Am.* 1. *p.* 328; *DC.! prodr.* 6. *p.* 226.
Hills and fields, Canada and Northern States, from Massachusetts! and Vermont! to New Jersey!—Aug.–Sept.—♃ Stem about 2 feet high.

2. *G. Californicum* (DC.): stem herbaceous, erect, arachnoid-tomentose, somewhat glandular below; leaves linear-lanceolate, acuminate, somewhat decurrent, glandular-puberulent and viscid both sides (the lower surface often clothed with a deciduous wool); heads in dense clusters; scales of the silvery-white scarious involucre oval or oblong, mostly obtuse.—*DC.! l. c. p.* 224; *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 403. G. decurrens, *Less. in Linnæa*, 6. *p.* 525; *Hook. & Arn. bot. Beechey, p.* 151, *& suppl. p.* 359; not of *Ives.*
β.? scales of the involucre pale purple.—G. Sprengelii *β.* erubescens, *Nutt. l. c.*

California, Chamisso, *Douglas! Nuttall!* &c. April–May.— ① *Nutt.* Perhaps too near the preceding.

4. *G. Sprengelii* (Hook. & Arn.): herbaceous; leaves clothed with white wool on both sides; the lower spatulate, the upper linear; those of the branches somewhat decurrent; corymbs axillary and terminal, glomerate, pedunculate, of few heads; scales of the silvery and slightly brownish involucre oblong, scarcely acute, shining.—*Hook. & Arn. bot. Beechey, p.* 150. G. Chilense, *Spreng. syst.* 3. *p.* 480; *Less. in Linnæa,* 6. *p.* 525. G. decurrens *β. Hook.! fl. Bor.-Am.* 1. *p.* 328. G. luteo-album *β.* occidentale, *Nutt.! in trans. Amer. phil. soc. l. c.*

β. smaller; heads in a simple capitate cluster.—G. luteo-album, *Hook.! fl. Bor.-Am. l. c.*

California! and Oregon! apparently common. ①—Near G. Vira-vira of Chili. We know not how to distinguish the smaller states of this species from G. luteo-album, except that the heads are larger, and the achenia perfectly smooth under a lens, instead of minutely tuberculate. The involucre is often slightly yellowish.

* * *Leaves not decurrent: scales of the involucre never yellow: heads corymbose-clustered.*

5. *G. polycephalum* (Michx.): erect; leaves linear-oblanceolate, tapering at the base, with undulate margins, mucronate-acute, nearly glabrous or pubescent-scabrous above, woolly-tomentose beneath, as well as the stem; heads clustered at the extremity of the paniculate-corymbose branches, ovate-conical before expansion, then obovate; scales of the scarious ochroleucous involucre ovate and oblong, rather obtuse; perfect flowers few.—*Michx.! fl.* 2. *p.* 127; *Pursh, fl.* 2. *p.* 584; *Ell. sk.* 2. *p.* 325; *Hook.! fl. Bor.-Am.* 1. *p.* 328; *Darlingt.! fl. Cest. p.* 494; *DC.! prodr.* 6. *p.* 227. G. obtusifolium, *Linn. spec. ed.* 2. *p.* 1198 (*pl. Gronov.!*); *Willd.! spec.* 3. *p.* 1880. G. conoideum, *Lam. dict.* 2. *p.* 775.

β. stem villous-pubescent with viscid hairs; leaves varying from lanceolate to narrowly oblong.

Old fields and woods, Canada! to Louisiana! and Texas! common. Aug.–Sept.—① Plant fragrant, 1–2 feet high.

6. *G. uliginosum* (Linn.): low, woolly, diffusely branched; leaves lanceolate-linear, tapering at the base, tomentose on both sides, especially the uppermost; heads in terminal and sessile capitate clusters, subtended by leaves; scales of the involucre oblong, rather obtuse, scarious, often brownish; achenia smooth.—*Linn. spec.* 2. *p.* 856; *Fl. Dan. t.* 859; *Engl. bot. t.* 1194; *Michx.! fl.* 2. *p.* 127; *Pursh, l. c.*; *Hook.! fl. Bor.-Am.* 1. *p.* 329; *Darlingt.! l. c.*; *DC.! prodr.* 6. *p.* 230.

β. achenia minutely hispid-scabrous.—G. pilulare, *Wahl. fl. Lapp. p.* 205, *t.* 13? (*Less. in Linnæa,* 6. *p.* 525.)

Common in low grounds throughout the Northern, Middle, and Western States! and Newfoundland! Canada! Saskatchawan! Oregon! and California. July–Sept.—① Plant 4–6 inches high.—The forms with smooth and scabrous achenia appear to be equally abundant, and are undistinguishable, except by this character. The latter also occurs in Siberia, fide *Ledeb. fl. Alt.* 4. *p.* 57.—*Marsh Cudweed.*

7. *G. palustre* (Nutt.): low, very woolly; stem erect, branching; leaves spatulate-oblong or nearly linear, acute, tomentose both sides; heads crowded in terminal capitate very woolly clusters, which are leafy at the base; scales of the involucre whitish or brownish, scarious, linear, obtuse; achenia very minutely scabrous.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 403.

β. achenia perfectly smooth and glabrous.

Rocky Mountains, Oregon, California (and Chili), *Nuttall!* β. Sweet Water of the Upper Platte, *Lieut. Fremont!*—① Plant varying from an inch to a span high; allied to G. uliginosum.

8. *G. gossypinum* (Nutt.): white and floccosely woolly; stem nearly simple? erect; radical leaves spatulate-lanceolate, acute; the cauline crowded, linear, acuminate, sessile, narrower towards the base; heads conglomerate, sessile, terminal; scales of the ovate involucre yellowish, oval or oval-oblong, obtuse. *Nutt. in trans. Amer. phil. soc. l. c. p.* 404.

Shores of the Pacific near the mouth of the Oregon; rare, *Nuttall.*—① Plant 12–18 inches high, heavy scented, with the appearance of Helichrysum graveolens, somewhat glandular beneath the copious pubescence. *Nutt.*

9. *G. microcephalum* (Nutt.): suffruticose? white and densely woolly; stem erect, simple; leaves lanceolate, apiculate, sessile, narrower towards the base, nearly all similar; heads ovate, conglomerate in a short spike; scales of the involucre scarious, white and silvery, acute. *Nutt. in trans. Amer. phil. soc. l. c. p.* 404.

St. Diego, California: rare.—About a foot high. Leaves 1–1½ inch long, 2–3 lines wide, white on both sides, with a blackish apiculate point. Involucre very floccose at the base: perfect flowers about 5.—Allied apparently to G. lanuginosum; but strongly resembling some species from the Cape of Good Hope. *Nuttall.*

* * * *Leaves not decurrent: scales of the involucre never yellow: heads racemose-spicate.*

10. *G. purpureum* (Linn.): stems mostly simple or branched from the base, erect or ascending, tomentose; leaves oblong-spatulate or oblanceolate, mostly obtuse, mucronate, tapering to the base, somewhat arenose-woolly, but green above, densely tomentose and canescent beneath; heads in sessile clusters in the axils of the upper leaves, and spicate at the summit of the stem; scales of the involucre lanceolate-oblong, scarious, tawny or whitish, the inner often marked with purple; achenia minutely scabrous.—*Linn.! spec.* 2. *p.* 854 (ex syn. *Gronov.! & Dill. Elth. t.* 109); *Michx.! fl.* 2. *p.* 127; *Ell. sk.* 2. *p.* 325; *Darlingt.! fl. Cest. p.* 492; *DC.! prodr.* 6. *p.* 232. G. spathulatum, *Lam. dict. p.* 758. G. Americanum, *Willd. spec.* 3. *p.* 1887 (excl. syn. *Swartz. &c.*); *Pursh, fl.* 2. *p.* 525. G. Pennsylvanicum, *Willd. enum. p.* 867; *DC.! l. c.* G. hyemale, *Walt. Car. p.* 203.—Varies, with the clusters more spicate, and the pubescence closely appressed and silvery. G. spicatum (*Lam. l. c.?*) *DC.! l. c.* in part; *Nutt. in trans Amer. phil. soc. l. c.*

β.? *falcatam:* leaves nearly equally woolly on both sides, narrowly oblanceolate; the upper nearly linear.—G. falcatum, *Lam. l. c.? DC. l. c.* G. Americanum β., *Hook.! compan. to bot. mag.* 1. *p.* 96.

Sandy or gravelly soil, from the coast of New Hampshire! to Louisiana! and California, ex *Nuttall.* β. Louisiana! and Texas! July–Sept., or in the Southern States, March to June.—Root apparently annual, at least in the northern plant; but described as perennial by Muhlenberg, Elliott, Darlington, &c.; which appears to be the case in some southern forms of this variable species. Stem 6–20 inches high, slender. All the species of this subdivision are ill defined.

11. *G. ustulatum* (Nutt.): perennial, herbaceous, erect, canescently tomentose; stem simple, terete, floccose-pubescent; leaves oblong-spatulate, obtuse, mucronulate; the upper ones narrower, sessile (not decurrent); heads oblong, aggregated in the axils of the upper leaves into a continuous short and dense oblong spike; scales of the involucre lanceolate and linear, acute, brownish towards the points. *Nutt. in trans. Amer. phil. soc. l. c. p.* 405.

Plains of the Platte towards the Rocky Mountains, and near St. Barbara, California, *Nuttall.*—Said to be nearly allied to G. spicatum, and therefore perhaps not distinct from G. purpureum.

12. *G. sylvaticum* (Linn.): stem simple, herbaceous, erect, leafy, tomentose; leaves linear-lanceolate or linear, woolly beneath or on both sides; heads axillary, sessile [forming a leafy spike]. *DC. l. c.*—*Wahl. fl. Lapp. p.* 203; (*Fl. Dan. t.* 254 *&* 1229;) *Schkuhr, handb. t.* 243.
Greenland! and Labrador! (*Herb. Schweinitz!*) ♃—Pursh is surely mistaken in giving this species as a native of New York and Canada; in stony woods.

§ 2. *Pistillate flowers in a single series: achenia obovoid, obcompressed.*—HOMALOTHECA, Endl. (Omalotheca, *Cass.*, *DC.*)

13. *G. supinum* (Villars): cæspitose; flowering stems simple, slender, woolly above; leaves linear, woolly; heads oblong, solitary, or few and spicate-racemose; scales of the involucre lanceolate-oblong, acute, brown; achenia minutely hairy.—*Vill. Delph.* 3. *p.* 192; *Engl. bot. t.* 1193; *Hook. fl. Bor.-Am.* 1. *p.* 329. G. pusillum, *Hænke; Schkuhr, handb. t.* 267. Omalotheca supina, *DC.! prodr.* 6. *p* 245.
Labrador, *Dr. Morrison.* Greenland, *Herb. DC.* Dry ravine of the Amonoosuck, White Mountains of New Hampshire, *Nuttall!* (where it has not since been found.)—♃ Plant 2–4 inches high.

159. ANTENNARIA. *Gærtn.* (excl. spec.); *R. Br. in Linn. trans. l. c.*

Heads many-flowered, diœcious; the corolla tubular, 5-toothed, in the pistillate flowers filiform. Scales of the involucre imbricated, scarious, colored. Receptacle convex or nearly flat, alveolate. Style in the fertile flowers 2-cleft; in the staminate simple and undivided, or nearly so. Achenia nearly terete. Pappus a single series of bristles, in the pistillate flowers capillary, in the staminate clavate or barbellate at the apex.—Perennial tomentose-canescent herbs; with alternate entire leaves, and corymbose (or sometimes solitary) heads. Involucre white, rose-color, or brownish, never yellow. Corolla yellowish.

§ 1. *Fertile heads mostly with a few imperfect staminate flowers in the centre: pappus in the sterile plant somewhat obscurely clavate: stems erect, not cæspitose or stoloniferous.*—Margaripes, *DC.*

1. *A. margaritacea* (R. Br. l. c.): stem woolly-tomentose, corymbose at the summit; leaves linear-lanceolate, tapering to an acute point, 1–3-nerved, with revolute margins; the upper surface at first arenose-woolly; the lower tomentose; scales of the involucre nearly white, in the fertile plant obtuse, in the sterile rounded at the summit.—*Hook.! fl. Bor.-Am.* 1. *p.* 329; *DC.! prodr.* 6. *p.* 270. Gnaphalium margaritaceum, *Linn. spec.* 2. *p.* 850; *Michx.! fl.* 2. *p.* 127; *Engl. bot. t.* 2018; *Pursh, fl.* 2. *p.* 524; *Darlingt.! fl. Cest. p.* 494. G. Americanum, *Clusius, hist.* 1. *p.* 327, *f.* 3.
Dry woods and fields, Canada! Hudson's Bay, and Newfoundland! to the mountains of the Southern States! and west to the Rocky Mountains! Unalaschka! and Oregon! (Also naturalized? in Europe.) Aug.–Oct.— Stem 1–2 feet high. The sterile plant, which is scarcely known in Europe, is here nearly as abundant as the fertile.—*Everlasting.*

§ 3. *Heads entirely diœcious: pappus of the sterile flowers mostly strongly clavate: stems cæspitose, often surculose, or stoloniferous.*—Catipes, *DC.*

2. *A. luzuloides:* silky-villous throughout; sterile stems or stolons none; leaves linear, obscurely 3-nerved, tapering to the base; corymb compound, loose; sterile heads small; the exterior scales of the glabrous involucre short and rounded; the inner ones spatulate, with dilated and very obtuse white tips.

Oregon or Rocky Mountains. (*Drummond* or *Douglas.*)—Stem 10 inches high, slender, simple, clothed like the leaves with a close appressed silky pubescence. Leaves 2–3 inches long, 1–2 lines wide. Heads numerous (40–50) in an open compound corymb, not more than half the size of those of A. Carpathica: the scales of the involucre not sphacelate or eroded. Pappus not denticulate or scabrous; the tips very much dilated and spatulate.—Although most related to Hooker's striking var. pulcherrima of the following species, yet it has very much smaller and glabrous heads, and narrower leaves; and widely differs from the original A. Carpathica. We have only seen the staminate plant.

3. *A. Carpathica* (R. Br. l. c.): sterile stems not stoloniferous; leaves lanceolate, or the radical oblanceolate, 3-nerved, villous-tomentose; corymb capitate; involucre very woolly and turbinate at the base, brownish, the inner with elongated and shining sphacelate-scarious (often white) tips, which are obtuse in the sterile, but acute in the fertile heads. —*Bluff & Fing. fl. Germ.* 2. *p.* 348; *Hook.! fl. Bor.-Am.* 1. *p.* 329; *DC.! prodr.* 6. *p.* 269. Gnaphalium Carpathicum, *Wahl. fl. Carp. p.* 258, *t.* 3; *Koch, fl. Germ. & Helv. p.* 364. (Varies with the leaves nearly glabrous above, or woolly both sides. *Hook. l. c.*)

β. *pulcherrima* (Hook.! l. c.): tall (a foot or more high), and silky-tomentose throughout.

Island of Anticosti, *Pursh! Goldie.* On the higher Rocky Mountains, about lat. 52°, *Drummond!* and Mt. Rainer, *Mr. Tolmie!* β. Swamps of the plains among the Rocky Mountains, *Drummond!*—Heads 3–8, or in β. 8–15, in a close corymb. Pappus in the sterile flowers denticulate; the clavate tips either spatulate and obtuse, or lanceolate and acute.

4. *A. alpina* (Gærtn.): sterile stems short and ascending, or none; leaves villous-tomentose, at least on the lower surface; the radical spatulate, the cauline linear; heads 3–5 in a terminal cluster, nearly sessile; involucre woolly at the base; the livid inner scales mostly erose-denticulate, obtuse in the sterile, but acute or acuminate in the fertile heads.—*R. Br. l. c.; Less. in Linnæa,* 6. *p.* 221; *Hook.! l. c.; DC.! l. c.* A. Labradorica, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 406. Gnaphalium alpinum, *Linn.; Wahl. fl. Lapp. p.* 203.

β. *monocephala:* heads solitary or rarely geminate.—A. monocephala, *DC.! l. c.*

Greenland and Labrador! Hudson's Bay! and along the Arctic regions to Kotzebue's Sound! Unalaschka! &c.—Smaller than the preceding. Pappus in the sterile plant strongly clavate.

5. *A. dioica* (Gærtn.): sterile stems stoloniferous; leaves silvery-tomentose-canescent on the lower or on both sides (commonly glabrous above); the radical spatulate, one-nerved or 3-nerved at the base; the cauline linear-lanceolate, appressed; heads several, in a capitate corymb; scales of the involucre with erose-denticulate mostly obtuse (white, ochroleucous, rose-color, or purple) tips; achenia perfectly smooth.—*Gærtn. fr.* 2. *p.* 410, *t.* 167; *Hook.! l. c.; DC.! l. c.* Gnaphalium dioicum, *Linn.; Engl. bot. t.* 267; *Wahl. fl. Lapp. p.* 202.

β. parvifolia: heads glomerate-capitate; leaves silvery tomentose-canescent on both sides; scales of the sterile involucre ochroleucous, of the fertile purple.—A. parvifolia, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 406.

Arctic America! and from Newfoundland! and Labrador to the Rocky Mountains! *β.* Black Hills of the Platte, *Nuttall!* Wind River Chain of the Rocky Mountains, *Lieut. Fremont!* (*a.* & *β.*)

6. *A. plantaginifolia* (Hook.! l. c.): sterile stems stoloniferous or flagelliform, the flowering simple and scape-like; leaves silky-villous on one or both sides when young, but when old glabrous above and canescent beneath; the radical petioled, oval or obovate-spatulate (usually large), 3-nerved; the cauline lanceolate, appressed; heads in a small crowded corymb; scales of the involucre with white (rarely purplish) erose or crenulate tips; those of the sterile plant obtuse, of the fertile narrow and mostly acute; achenia minutely glandular-papillose.—A. plantaginea, *DC.! l. c.* Gnaphalium plantaginifolium, *Linn.! spec.* 2. *p.* 850; *Willd. spec.* 3. *p.* 1884. (G. plantaginis folio, *Pluk. alm. t.* 348, *f.* 9.) G. plantagineum, *Murr. syst. p.* 748; *Pursh, fl.* 2. *p.* 525; *Ell. sk.* 2. *p.* 327. G. dioicum, var. plantaginifolium, *Michx.! fl.* 2. *p.* 128. G. dioicum & var. plantaginifolium, *Darlingt.! fl. Cest. p.* 494. 2/

β. monocephala: stems shorter, bearing a single larger head. *Michx. l. c.* —Gnaphalium monocephalon, *Carpenter! mss.*

Woods and sterile knolls, &c. from Hudson's Bay! to Florida! Louisiana! and west to the Rocky Mountains! *β.* Louisiana, *Prof. Carpenter!* Near Philadelphia, *Mr. Lea!* &c. April–May: in the Southern States, Feb.–March.—Plant 4–10 inches high. Radical leaves often 2–3 inches long, and one or two wide. Pappus of the sterile flowers sparsely barbellate, more or less evidently thickened towards the apex.—*Plantain-leaved Cud-weed.*

7. *A. racemosa* (Hook.! l. c.): sterile stems stoloniferous; leaves tomentose beneath; the upper surface and the scape-like stem nearly glabrous; the radical oval or obovate-spatulate, petioled, somewhat 3-nerved; the cauline oblong or lanceolate; heads loosely racemose-paniculate; scales of the involucre nearly glabrous, greenish; those of the sterile plant obtuse; the inner of the fertile heads narrow and acute; achenia perfectly smooth.

Alpine woods of the Rocky Mountains (probably about lat. 52°), *Drummond!*—Fertile plant often a foot or more in height; the heads loosely disposed in a long racemose panicle. Pappus in the sterile heads minutely scabrous, very obscurely thickened above: the style slightly 2-cleft at the apex.

8. *A. dimorpha:* cæspitose, depressed, somewhat stoloniferous; leaves crowded on the short branches of the suffruticose caudex, oblong-spatulate or nearly linear, silky-villous; heads solitary, on short peduncles, scarcely exserted beyond the leaves; scales of the involucre brownish, the exterior woolly; the inner scarious, lanceolate, acute in the sterile, and acuminate in the fertile heads; pappus of the former capillary, sparsely and minutely barbellate towards the apex.—Gnaphalium (subgen. Omalotheca, § Heterophania) dimorphum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 405.

Black Hills of the Platte, *Nuttall!* May.—Plant 1–3 inches high. Leaves an inch long; in the fertile plant 2–3 lines, in the sterile scarcely a line wide. Heads twice as large as in Gnaphalium supinum.—This plant appears to our view a genuine Antennaria; notwithstanding the capillary pappus of the sterile flowers; which, although not thickened even in the slight manner of the preceding species, is yet manifestly barbellate (under a lens) towards the apex.

160. FILAGO. *Tourn. inst. t.* 259; *Gærtn. fr. t.* 166; *DC. l. c. p.* 247.

Heads many-flowered, heterogamous; the central flowers tubular, 4-5-toothed, perfect, but often infertile; the others pistillate, filiform. Scales of the involucre few, mostly woolly. Receptacle columnar or turbinate, naked at the summit, where it bears the perfect and a portion of the pistillate flowers, chaffy at the margin or base; the scarious chaff resembling the proper scales of the involucre, each bearing in its axil a pistillate flower. Achenia nearly terete, smooth or minutely papillose. Pappus of the central flowers capillary; of the exterior caducous or none.—Annual tomentose herbs, usually branched; with alternate entire leaves, and small mostly glomerate or fascicled heads.

1. *F. Germanica* (Linn.): woolly-tomentose; stem dichotomous, the upper branches arising from the capitate sessile glomerules; leaves lanceolate, acute, erect, crowded; heads pyramidal; involucral scales and chaff cuspidate, the exterior woolly; the exterior pistillate flowers in several series, destitute of pappus.—*Linn. spec. ed.* 2. *p.* 1311; *DC.! prodr.* 6. *p.* 247. F. vulgaris, *Lam.* Gnaphalium Germanicum, *Linn. spec.* (*ed.* 1) 2. *p.* 857; *Fl. Dan. p.* 997; *Pursh, fl.* 2. *p.* 526; *Darlingt.! fl. Cest. p.* 493. Gifola vulgaris, *Cass. in dict. sci. nat.* Impia Germanica, *Bluff & Fing. fl. Germ.* 2. *p.* 342.

Old fields and roadsides, New York! to Virginia! introduced from Europe. July–Oct.—A span high. Heads aggregated in globose capitate clusters.—*Herba Impia. Cudweed.*

2. *F. Californica* (Nutt.): arachnoid-tomentose, paniculately branched from the base; leaves linear, spreading, mucronulate, the lower spatulate-linear; heads ovoid, in small capitate clusters; involucral scales and chaff all obtuse; the exterior strongly boat-shaped and very woolly; the innermost nearly glabrous; pappus of the exterior pistillate flowers none, of the central somewhat copious.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 405.

β. tomentosa (Nutt.! l. c.): leaves and glomerules more crowded; chaff somewhat purplish.

St. Barbara, California, *Nuttall!*—A span high. Heads larger and more glomerate than in F. minima (F. montana, *DC.*), but smaller than in F. arvensis. Achenia papillose-scabrous.

3. *F. parvula*: canescently woolly; stem erect, simple, or slightly branched at the summit; leaves linear-lanceolate, cuspidate; heads ovate-conical, acute, somewhat clustered; involucral scales and chaff ovate, acutish; the exterior boat-shaped and very woolly; the innermost scarious, oblong, obtuse, nearly glabrous (yellowish); pappus of the exterior pistillate flowers none; of the central rather copious.—Gnaphalium? filaginoides, *Hook. & Arn. bot. Beechey, suppl. p.* 359; *Nutt.! l. c. p.* 404.

California, *Douglas, Nuttall!*—Stem slender, 4–6 inches high. Leaves small, tipped with a blackish conspicuous acuminate-cuspidate point; the uppermost linear-oblong and merely mucronulate. Achenia glandular-puberulent. Pappus scabrous.—Although overlooked by the authors who have hitherto noticed this plant, pistillate flowers certainly exist in the axils of all the chaffy scales; and the species is closely allied to the preceding.

Subtribe 8. SENECIONEÆ, *Cass.*, *DC.*—Heads homogamous or heterogamous, never diœcious, discoid or radiate; the rays ligulate, in a single series. Receptacle scarcely ever chaffy. Anthers not caudate. Pappus capillary.

CONSPECTUS OF THE GENERA.

Div. 1. ERECHTITEÆ.—Heads discoid, heterogamous; the flowers all tubular.

161. ERECHTITES. Marginal flowers pistillate, very slender, 2–3-toothed.

Div. 2. EUSENECIONEÆ.—Heads homogamous, or heterogamous and radiate.

* *Scales of the involucre in one or two series.*

+ Leaves alternate.

162. CACALIA. Heads discoid, 5–many-flowered. Achenia glabrous. Pappus scabrous. Flowers white or whitish.
163. SENECIO. Heads radiate or discoid, many-flowered. Pappus of very slender bristles. Receptacle flat or convex. Flowers mostly yellow.
164. TETRADYMIA. Heads discoid, 4- (rarely 5–9-) flowered. Pappus of copious denticulate bristles. Achenia villous with long denticulate hairs. Receptacle small.
165. CROCIDIUM. Heads radiate, many-flowered. Pappus of the disk-flowers barbellate, caducous; of the ray none! Receptacle conical!

+ + Leaves opposite.

166. ARNICA. Heads radiate, many-flowered. Pappus barbellate or strongly denticulate, rather rigid. Receptacle flat.

* * *Involucre imbricated.*

167. LESSINGIA. Heads discoid, many-flowered, homogamous; the marginal flowers larger and radiatiform, deeply 5-lobed. Pappus scabrous, rather rigid. Achenia silky-villous.

Div. 1. ERECHTITEÆ, *DC.*—Flowers discoid, heterogamous; the marginal flowers tubular, pistillate.

161. ERECHTITES. *Raf.* (*fl. Ludov. p.* 65? excl. char.); *Less. syn. p.* 390; *DC. prodr.* 6. *p.* 294.

Heads many-flowered, discoid; the flowers all tubular; the marginal pistillate, with a very slender somewhat 2–3-toothed corolla; the others perfect, with the corolla 4–5-toothed. Scales of the cylindrical involucre in a single series, linear, acute, with a few calyculate bracteoles. Receptacle naked, somewhat papillose. Branches of the style tipped with a pubescent cone. Achenia oblong, striate, somewhat contracted at the apex. Pappus copious, of very fine capillary bristles.—Erect annual herbs (the genuine species American), with alternate simple leaves, and corymbose heads. Flowers whitish or yellowish.

1. *E. hieracifolia* (Raf.): somewhat hairy or glabrous; stem simple or paniculate above, striate-sulcate; leaves lanceolate-oblong, acute, unequally and sharply toothed or incised, tapering to the base, sessile; the upper often sagittate-auriculate at the base and partly clasping; involucre glabrous, subtended by small subulate-linear calyculate bracteoles.—*DC.! prodr.* 6. *p.* 294. E. hieracifolia, præalta, & elongata, *Raf.* Senecio hieracifolius, *Linn. spec.* 2. *p.* 866; *Michx.! fl.* 2. *p.* 119; *Pursh! fl.* 2. *p.* 529; *Ell. sk.* 2. *p.* 328; *Hook.! fl. Bor.-Am.* 1. *p.* 332; *Darlingt.! fl. Cest. p.* 498. S. Americanus altissimus, &c. *Herm. parad. Bat. t.* 226; *Pluk. phyt. t.* 112, *f.* 1. Cineraria Canadensis, *Walt.?* Neocis hieracifolia (& N. rigidula) *Cass. in dict. sci. nat.* 34. *p.* 387.

Moist waste places, Canada! Saskatchawan! and throughout the United States! &c.; particularly abundant in recent clearings, where the wood has been burnt (whence the popular name of *Fire-weed*). July–Sept.—A coarse weed, 1–5 feet high, with the aspect of a Sonchus. Pappus copious and very white. Corolla 10-nerved.

Div. 2. EUSENECIONEÆ, *DC.*—Heads either homogamous and discoid, or heterogamous and radiate; the rays pistillate.

162. CACALIA. *Linn.* (excl. spec.); *Schkuhr, handb. t.* 236; *DC. l. c.*

Heads 5-many-flowered; the flowers all tubular and perfect. Scales of the cylindraceous involucre 5–30, in a single series, often with a few bracteoles at the base. Receptacle flat, not chaffy, sometimes with a conical or scale-like appendage in the centre. Limb of the corolla expanded, deeply 5-cleft; the lobes usually furnished with a mid-nerve. Branches of the style tipped with a very short cone, or obtuse, usually with a ring of minute hairs. Achenia oblong, glabrous, not rostrate. Pappus of numerous capillary scabrous bristles.—Perennial herbs, mostly very glabrous; with alternate often petioled leaves, and corymbose heads. Flowers white, ochroleucous, or rarely rose-color.

§ 1. *Receptacle flat and naked.*—Eucacalia, *DC.*

1. *C. suaveolens* (Linn.): glabrous; stem striate-angled; leaves triangular-lanceolate, hastate, acute, unequally serrate-toothed; the cauline on winged petioles: heads in a compound corymb, 25–30-flowered; scales of the involucre about 12; bracts several, setaceous-linear, spreading.—*Linn.! spec.* 2. *p.* 835; *Michx.! fl.* 2. *p.* 96; *Pursh, fl.* 2. *p.* 518; *Schkuhr, handb. t.* 236; *DC.! l. c.* Senecio suaveolens, *Ell. sk.* 2. *p.* 328.

Woods and along streams, Canada? New York (Avon, *B. D. Greene!*) and Connecticut, (Milford, *Dr. Robbins!*) to Virginia! the western part of Georgia! Kentucky! and Illinois! Aug.–Oct.—Plant 3–5 feet high. Radical leaves on long petioles; the large hastate lobes mostly obtuse, often 2-lobed. Branches of the style canaliculate, very obtuse.

§ 2. *Receptacle usually furnished with a central conical or scale-like appendage: involucre 5-leaved and 5-flowered, naked, or slightly and minutely bracteolate at the base.*—Conophora, *DC.*

2. *C. reniformis* (Muhl.): stem sulcate-angled; leaves petioled, green on both sides, palmately veined (often slightly hairy on the veins beneath), repandly angulate-toothed; the radical reniform; the cauline flabelliform, dilated; the teeth strongly mucronate; corymb compound, fastigiate.—*Muhl.! in Willd. spec.* 3. *p.* 1735; *Pursh, fl.* 2. *p.* 518; *Nutt. gen.* 2. *p.* 138; *DC. l. c.*

Rich damp woods, Pennsylvania! to North Carolina! along the mountains. Also in Illinois, *Michaux* (in a note under the following species), and Indiana, *Dr. Clapp!* Aug.–Sept.—Stem 4–9 feet high. Leaves ample, dilated; the radical often 2 feet wide; the margin angulate-incised and repand-toothed: the upper cauline either truncate, or more or less cuneate at the base. Heads 5-flowered, as correctly described in *Muhl. fl. Lancast. mss.*; not many-flowered, as stated by Willdenow. Scales of the involucre lanceolate-oblong, obtuse. Receptacle slightly, or not at all produced in the centre.

3. *C. atriplicifolia* (Linn.): stem terete, glaucous; leaves petioled, very glaucous beneath, palmately veined, angulate-lobed or toothed (the teeth mucronulate); the radical and lower deltoid-cordate or somewhat reniform; the upper rhomboid; the uppermost cuneate at the base; corymb compound, loose.—*Linn.! spec.* 2. *p.* 835; *Michx.! fl.* 2. *p.* 96; *Pursh! fl.* 2. *p.* 518; *Schkuhr, handb. t.* 236; *Ell. sk.* 2. *p.* 310; *Darlingt. fl. Cest. p.* 499; *DC.! l. c. p.* 329. C. Virginiana, &c. *Moris. hist.* 3. *sect.* 7. *t.* 15, *f.* 7. Senecio atriplicifolius, (& *β.* reniformis?) *Hook. fl. Bor.-Am.* 1. *p.* 332.

Moist woodlands, Upper Canada to Georgia! and Missouri! July–Sept.—Stem 3–6 feet high. Radical and lower cauline leaves 4–6 inches long: the lobes or teeth triangular, mostly acute. Scales of the involucre lanceolate-oblong, obtuse. Receptacle produced in the centre into a lanceolate somewhat chaffy appendage, which is usually larger than the achenia, and 2–3-cleft at the apex, as if composed of as many confluent paleæ; but is often much shorter, or even inconspicuous.—*Indian Plantain.*

4. *C. diversifolia:* stem striate-angled; leaves petioled, green on both sides, somewhat tripli-nerved, veiny; the lower ovate, obtuse, slightly cordate, obtusely angulate-toothed or repand; the upper 3–5-lobed, somewhat hastate; corymb compound, loose.

River swamps, Middle Florida, *Dr. Chapman!* May.—Plant 2–3 feet high, not glaucous. Leaves nearly as large as in C. atriplicifolia; the upper on short but naked petioles; the lateral lobes lanceolate, acute, entire, or with one or two teeth. Heads, &c. as in the preceding. Receptacle slightly produced in the centre.

5. *C. ovata* (Walt.? Ell.): stem terete; leaves glaucous beneath, tripli-quintupli-nerved and veiny, ovate or oval, obtuse, entire or slightly and irregularly repand-toothed; the lower and radical tapering into long, the upper with short margined petioles; the uppermost sessile; corymb-compound loose, fastigiate.—(*Walt. Car. p.* 196?) *Ell.! sk.* 2. *p.* 311; *DC. l. c.*

Damp woods, western part of Georgia! and Alabama! to Florida! and Western Louisiana! July–Aug.—Stem 3–4 feet high, quite terete, slightly glaucous. Leaves rather veiny than nervose, pale and glaucous beneath; the radical (on very long petioles) and lower cauline with the lamina 5–8 inches long; the upper smaller and less petioled. Scales of the involucre lanceolate-linear, rather obtuse. Receptacle with an obscure central projection, or none.—Walter's character "foliis nervosis utrinque vividibus" is more applicable to the following species; to which Elliott, if he had been acquainted with that plant, would probably have applied the name. Having, however, been appropriated, (perhaps correctly,) to the present species, it should retain the name.—Elliott calls the leaves *obtuse* in the character, but *acute* in the detailed description.

6. *C. tuberosa* (Nutt.): stem sulcate-angled; leaves green on both sides, strongly 5–7-nerved; the radical and lower cauline lanceolate-ovate or oval, obtuse or acutish, entire or repand-denticulate, tapering into very long petioles; the upper ovate or cuneate-oblong, usually toothed towards the apex, on short margined petioles; corymb compound, fastigiate.—*Nutt.! gen.* 2. *p.* 138; *DC. l. c.* C. paniculata, *Raf. ann. nat. p.* 15. C. pteranthes, *Raf. l. c.?*

Marshes and wet prairies, Ohio! Michigan! Illinois! and Upper Missouri! to Arkansas! Louisiana! Western Alabama! and Florida! May–July.—"Root a round tuber, similar to a small turnip," *Nuttall*, &c. (but some other botanists have not met with the tubers.) Stem 2–6 feet high. Leaves thickish, not at all glaucous; the radical resembling those of the common Plantain; the largest rarely subcordate: the upper either entire, or obtusely toothed, or even incised. Scales of the involucre oblong-linear, obtuse. Receptacle pointed with a short subulate appendage.

7. *C. lanceolata* (Nutt.): stem terete, virgate, slender, somewhat glaucous; leaves glaucescent, 3- (sometimes 5-) nerved, lanceolate or linear-lanceolate, acute, entire, or very sparingly and sharply toothed; the radical and lower tapering into slender petioles; the uppermost sessile; corymb loose.—*Nutt.! gen.* 2. *p.* 138; *Ell.! sk.* 2. *p.* 311; *DC. l. c.*

Wet places, Georgia! to Florida and Louisiana!—Stem 2–3 feet high. Leaves thickish, 3–6 inches long, 3–10 lines wide; the cauline often with one or two sharp spreading teeth on each side. Scales of the involucre linear, acutish or acute. Receptacle with a central scale-like appendage.

C. gigantea (Hort. Vindob.), *Schauer in Linnæa*, 16, *suppl. p.* 216 (1842), raised from seeds received from New Orleans, so far as the description extends, does not differ from C. atriplicifolia.

163. SENECIO. *Linn.; Less. syn. p.* 391; *DC. prodr.* 6. *p.* 340.

Heads many-flowered, either discoid with the flowers all tubular and perfect, or radiate; the rays pistillate. Scales of the involucre in a single series, or calyculate with a few accessory scales. Receptacle not chaffy, naked or alveolate. Branches of the style in the disk-flowers truncate, the apex only minutely penicillate. Achenia not rostrate or winged, often grooved or ribbed. Pappus of numerous very slender capillary bristles.—Herbs or shrubs (occurring in almost every part of the world); with alternate leaves, and solitary, paniculate, or corymbose heads. Flowers for the most part yellow.

In many species of this vast genus (especially in S. coronopus, S. spartioides, S. ampullaceus, and S. filifolius,) the short hairs or papillæ of the achenia open at the apex when moistened, and emit spiral threads of considerable size, which may be distinctly observed with a simple lens of low power.

* *Annual: rays none.*

1. *S. vulgaris* (Linn.): somewhat woolly or nearly glabrous; leaves pinnatifid and toothed, clasping; the lowest tapering into petioles; heads corymbose, nodding, discoid; the calyculate scales (about 10) appressed, much shorter than the proper scales of the involucre; achenia puberulent.—*Linn. spec.* 2. *p.* 867; *Fl. Dan. t.* 513; *Engl. bot. t.* 747; *Pursh, fl.* 2. *p.* 528; *Hook.! fl. Bor.-Am.* 1. *p.* 331; *DC.! prodr.* 6. *p.* 341.

Waste and cultivated grounds in the Northern States! introduced from

Europe. Also Hudson's Bay, Newfoundland, and Labrador, (*Hook.*) June–Oct.—A homely weed, a span to a foot high.—*Groundsel.*

* * *Annual: heads radiate.*

2. *S. lobatus* (Pers.): glabrous (or slightly floccose when young); stem striate; leaves somewhat fleshy, lyrate-pinnatifid or pinnately divided; the lobes mostly distant and opposite, rounded, crenate-toothed or incised; corymb (usually compound) crowded, fastigiate; involucre nearly ecalyculate; rays about 12; achenia minutely hispid on the 5 alternate (stronger) ribs.—*Pers. syn.* 2. *p.* 436; *Ell.! sk.* 2. *p.* 332. S. lyratus, *Michx.! fl.* 2. *p.* 120, not of *Linn. f.* *&c.* S. glabellus, *Poir. dict.* 7. *p.* 102. S. Carolinianus, *Spreng. syst.* 3. *p.* 559. S. Mississippianus, *DC.! prodr.* 6. *p.* 427. S. densiflorus, *Martens, in bull. acad. Brux.* 8. *p.* 67. S. Schweinitzianus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 411.

Damp soils, rice-fields, &c. North Carolina! to Florida! Missouri! Louisiana! and Texas! common: flowering through the season.—Stem hollow. Leaves extremely variable in the degree of incision, and in the number and size of the segments; the uppermost leaves often auriculate-clasping and laciniate-incised; the lowest petioled.—*Butter-weed.*

3. *S. Coronopus* (Nutt.): glabrous, much branched; leaves all pinnatifid, auriculate-clasping, with a wide rachis and a few acute segments, those of the upper leaves denticulate; branches fastigiate, bearing few heads on elongated naked peduncles; scales of the campanulate involucre (about 20) smooth, carinate, with acute sphacelous tips; rays about 15, oblong, elongated; achenia cylindric, 10-ribbed, the ribs strigose; pappus about the length of the florets.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 213.

St. Barbara, California, *Nuttall!*—May.—Plant not glaucous. Rays bright yellow.—Mr. Nuttall inquires whether it may not be a variety of S. coronopifolius, *Desf.*, introduced by accident; and it does not differ in any essential points from the description of that species.

4. *S. Californicus* (DC.): glabrous, erect; stem nearly simple, somewhat angled, corymbose at the summit; radical leaves oblong, tapering into a petiole, entire; the cauline lanceolate, toothed, partly auriculate-clasping; corymb simple, somewhat crowded; scales of the campanulate slightly calyculate involucre 20, acuminate; rays about 20, several-nerved; the disk-flowers about 60; achenia velvety-villous [?]. *DC.! prodr.* 6. *p.* 426.

β. laxior (DC.! l. c.): corymb looser; rays 10–15; disk-flowers about 50; achenia more densely villous [?].

California, *Douglas.*—The so-called villosity of the achenia, in this species, is probably produced by the emission of spiral threads, when moistened.

5. *S.? flocciferus* (DC.): stems angled, glabrous, much branched from the base; leaves mostly radical, pinnately parted; the ovate acutely toothed lobes bearing here and there dense tufts of floccose hairs in their axils; cauline leaves few, at the origin of the branches; heads solitary terminating the branchlets; involucre glabrous, calyculate; rays almost none, deformed, pistillate, scarcely different from the disk-flowers; achenia glabrous. *DC. prodr.* 6. *p.* 426; *Hook. & Arn. bot. Beechey, suppl. p.* 360.

California, *Douglas.*—"The flowers are reddish; the ligulate florets appear to be in several rows, and gradually to pass into the tubular ones." *Hook. & Arn.*

* * * *Biennial: heads radiate, corymbose: involucre not calyculate.*

6. *S. palustris* (Hook.): stem erect, somewhat simple, villous; leaves broadly lanceolate, dentate-sinuate [or laciniately subpinnatifid], acute,

hairy or nearly glabrous; the upper partly clasping by a cordate base; heads corymbose at the summit of the stem or branches; pedicels not bracteolate; scales of the involucre about 20, in a single series, linear, acuminate; rays 20–21; achenia glabrous, with many narrow somewhat unequal ribs.—*DC.! prodr.* 6. *p.* 363; *Hook.! fl. Bor.-Am.* 1. *p.* 334. Cineraria palustris, *Linn. spec. ed.* 2. *p.* 1243; *Fl. Dan. t.* 573; *Engl. bot. t.* 151; *Schkuhr, handb. t.* 246; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 31.

β. congestus (Hook.! l. c.): very woolly; stem simple (4 inches to a foot high); leaves linear-ligulate, undulate or sinuate-toothed; heads crowded or capitate.—S. congestus, *DC. l. c.* Cineraria congesta, *R. Br.! in Parry's 1st voy. appx. p.* 279; *Hook. & Arn.! bot. Beechey, p.* 126.

Saskatchawan! (also saline marshy margins of Devil's Lake, N. W. Territory, *Mr. Nicollet!*) to the Arctic Sea! Kotzebue's Sound! &c. the var. *β.* confined to the arctic regions, and Melville Island! July.—Rays pale yellow. Pappus very copious, at first scarcely longer than the tube of the disk-corolla, at length very much longer than the flowers.—To this species, as thus considered, may probably be referred S. Kalmii, *Less. in Linnæa,* 6. *p.* 244.

7. *S. Hookeri:* biennial? arachnoid-pubescent, at length somewhat glabrous; stem simple; radical and lowest cauline leaves ovate or spatulate-oblong, obtuse, repand-denticulate or entire, contracted into short margined petioles; the upper linear-lanceolate, acute, entire, sessile; heads numerous, in a contracted and dense simple corymb; scales of the involucre about 12, nearly glabrous; rays 8–9, oblong, short (bright yellow?); achenia glabrous; pappus rather shorter than the 10-nerved corolla of the disk.—S. integrifolia, *Hook.! fl. Bor.-Am.* (excl. syn.), not of *Nutt.* Cineraria integrifolia, *Richards. appx. Frankl. journ. ed.* 2. *p.* 31; not of *Jacq., Willd., Pursh, &c.*

Woody country from lat. 54° to the shores of the Arctic Sea, *Richardson.* Rocky Mountains (lat. 52°), *Drummond!*—Plants 6–12 inches high, with fibrous roots, clothed when young with loose woolly hairs. Heads smaller than in S. spathulæfolius. Leaves perfectly smooth when the pubescence has fallen.

* * * * *Perennial: heads corymbose, chiefly radiate.*

† Leaves entire or denticulate.

8. *S. spartioides:* glabrous throughout; stems suffruticose, very numerous from the same ligneous tap-root, rigid, corymbose at the summit, leafy; leaves fleshy, narrowly linear, perfectly entire, rather obtuse, sessile; heads (large and showy) fastigiate-corymbose, on short minutely bracteolate peduncles; the calyculate scales subulate, minute; scales of the cylindrical involucre about 12, lanceolate-linear, acutish; rays mostly 7, oblong-linear, elongated; achenia silky-canescent.

Upper Platte; on a steep sand-bank of the Sweet-water River, *Lieut. Fremont!* Aug.–Sept.—Stems a foot high, forming a dense tuft. Leaves 1–3 inches long, about a line wide, very numerous. Heads half an inch in length. Rays golden-yellow. Pappus as long as the disk-corolla.—A remarkable and handsome species.

9. *S. megacephalus* (Nutt.): clothed with a deciduous wool, at length almost glabrous; stem low, stout; leaves lanceolate, acute, entire or obscurely denticulate; the lowermost tapering into petioles; the upper linear-lanceolate and partly clasping; corymb of 3–5 very large heads; scales of the nearly ecalyculate villous-pubescent involucre linear, acuminate, not sphacelate; rays 10–12, (pale yellow), short; achenia glabrous; pappus as long as the corolla of the disk.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 410.

Plains of the Platte, near the Rocky Mountains, *Nuttall!*—Plant 6–8 inches high. Heads very many-flowered, nearly an inch long.

10. *S. lugens* (Richards.): clothed with deciduous tomentose hairs, or nearly glabrous; stem simple, slender; leaves glandular-toothed, or often nearly entire, obscurely veined; the radical oblong-spatulate, tapering into short petioles; the cauline lanceolate and acute, partly clasping; corymb simple; involucre sparingly calyculate; the scales linear-lanceolate, acute, strikingly blackish-purple or sphacelate above the middle; rays about 12, oblong-linear, twice the length of the involucre; achenia glabrous.—*Richards. appx. Frankl. journ. ed.* 2. *p.* 31; *Spreng. syst.* 2. *p.* 558; *Hook.! fl. Bor.-Am.* 1. *p.* 332; *DC. l. c.* S. Kalmii, *Hook. & Arn.! bot. Beechey, p.* 126 (a stouter form).
Arctic America from Fort Franklin to the sea-coast, *Richardson!* and Kotzebue's Sound!—A foot high. Heads large; the calyculate bracteoles linear-subulate.

11. *S. exaltatus* (Nutt.): sparsely clothed with caducous villous hairs, at length glabrous; stem tall and robust, grooved, simple, naked above; leaves unequally crenate-denticulate (the teeth somewhat glandular), veiny; the radical and lower cauline broadly lanceolate-oblong, obtuse, on long petioles; the upper lanceolate, acute, partly clasping (sometimes deeply serrate, *Nutt.*); corymb compound, fastigiate, of very numerous (small) heads; involucre scarcely calyculate; the scales linear, with pubescent and slightly sphacelate or purplish tips; rays 6–8, oblong, short; achenia glabrous.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 410. S. lugens, *Nutt. in jour. Acad. Philad.* 7. *p.* 31; not of *Richards.*
Plains of the Oregon and of the Platte, *Nuttall!* &c.—Stem 3–5 feet high; the umbelliform corymb containing numerous heads, which are smaller than those of S. lugens.

12. *S. cordatus* (Nutt.): more or less hairy, especially towards the base of the tall and stout sulcate-angled stem; lower leaves cordate-ovate, repandly serrulate or nearly entire, obtuse, on long petioles; the upper lanceolate, clasping, serrate; heads numerous, in a nearly simple corymb; scales of the campanulate involucre (about 15) linear, with dark and sphacelous pubescent tips; rays 5 or 6, oblong; achenia glabrous.—*Nutt. in trans. Amer. phil. soc. l. c. p.* 411.
Alluvial situations in Oregon, near the mouth of the Wahlamet. *Nuttall.* June.—Plant 2–3 feet high, evidently allied to the preceding species.

13. *S. fastigiatus* (Nutt.): sparingly arachnoid-tomentose when young; stem slender, at length glabrous, simple, angled; leaves lanceolate or linear-lanceolate, mostly obtuse and entire, tapering into petioles, tomentose-canescent, or at length nearly glabrous; the upper cauline linear, small, subsessile; heads (small) numerous, in a fastigiate (simple or compound) corymb; involucre scarcely calyculate; the scales (yellowish) linear-lanceolate; rays about 8, linear-oblong; achenia glabrous.—*Nutt. in trans. Amer. phil. soc. l. c. p.* 410.
Plains of the Oregon, near the Wahlamet, *Nuttall!*—Stem 2 or 3 feet high. Leaves rather thick and rigid, the lower a span long (with the petioles), sometimes sparingly serrulate towards the apex, the margins inclined to be revolute. Heads about as large as in S. aureus.

14. *S. integerrimus* (Nutt.): glabrous throughout; stem simple, striate; leaves entire (rarely obscurely repand-denticulate), somewhat fleshy; the radical and lowest cauline short, lanceolate-oblong, rather obtuse, tapering into a petiole; the upper small, lanceolate, acute, partly clasping; corymb simple or nearly so; involucre hemispherical, calyculate with a few loose

and slender subulate bracteoles; the scales (15–20) narrowly linear, acute; rays about 8, small; the disk-flowers 40–50; achenia striate, nearly glabrous.—*Nutt.! gen.* 2. *p.* 165; *DC. prodr.* 6. *p.* 432.

β. cauline leaves very small, except those near the base of the stem, which appears scapiform; heads very few.—S. integerrimus, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 411.

Upper Missouri, *Nuttall, Mr. Nicollet!* *β.* Plains of the Platte towards the Rocky Mountains, *Nuttall!* May–June.—Stem 12–18 inches high. Radical leaves 3–5 inches long, and 1–2 wide. Heads 8–20, rather large: the calyculate bracts nearly equalling the involucre.

15. *S. hydrophilus* (Nutt.): very glabrous; stem simple, terete, striate, rather leafy; leaves (thickish) lanceolate, acute, entire (or obsoletely repand-denticulate), furnished with a prominent midrib; the radical and lowest cauline elongated, tapering into thickish somewhat clasping petioles; the others sessile, partly clasping; heads (small) numerous, in a compound naked corymb; the pedicels and involucre scarcely bracteolate; scales of the cylindraceous-campanulate involucre about 8, oblong-linear, obtuse, the tips purplish and somewhat sphacelate; rays 3–6, very small; the disk-flowers 18–25; achenia glabrous, obscurely angled.

a. stem stout; the corymbs (not fully developed) thyrsoid-paniculate.—S. hydrophilus, *Nutt.! in trans. Amer. phil. soc. l. c.*

β. stem slightly striate; corymbs fastigiate.

Margin of ponds, &c., in the Rocky Mountains along Ham's Fork of the Colorado of the West, *Nuttall!* *β.* Borders of a lake in the Wind River Chain of the Rocky Mountains, *Lieut. Fremont!* Aug.—About 2 feet high. Leaves much like those of Solidago sempervirens: the upper small and scattered. Bracteoles few and very minute.—Heads smaller than in S. integerrimus. Achenia not striate. Receptacle alveolate.

16. *S. lanceolatus:* glabrous (except the base of the stem, which is pubescent); stem tall, virgate, angled, simple or somewhat branched above, very leafy to the summit; cauline leaves uniform (thin), lanceolate, entire, acute at both ends, subsessile (the lowest petioled?); corymbs small and loose, terminal and from the axils of the upper leaves, paniculate; the slender peduncles and pedicels and the small heads sparingly bracteolate; bracteoles filiform-setaceous; scales of the cylindrical 15–20-flowered involucre 8–12, narrowly linear, acuminate; rays few and small; achenia (not striate?) glabrous.

Along the North Fork of the Platte, *Lieut. Fremont!*—Stem 3 feet high, slender, inclined to branch from the axils of the upper leaves, terminated by a narrow corymbose panicle. Lower cauline leaves wanting; the upper much longer than the internodes, 4–5 inches long, one-half to three-fourths of an inch wide, mucronulate; the margin somewhat revolute. Heads about as large as in S. Sarracenicus; and the attenuated bracteoles similar. Rays a little exceeding the disk. Pappus about the length of the corolla.

17. *S. ampullaceus* (Hook.): very glabrous; stem grooved, branched above; leaves fleshy, oblong, obtuse, entire or denticulate, partly clasping by a cordate base; the lowest spatulate; panicle corymbose; the peduncles in fruit much incrassated and turbinate at the base of the heads; involucre with a few minute setaceous bracteoles; rays 7–9, spreading; achenia slender, strigose-canescent.—*Hook. bot. mag. t.* 3487; *DC. prodr.* 6. *p.* 428.

Texas, *Drummond!*—Plant 2–3 feet high. Involucre at first cylindrical, at length enlarged at the base, as in Sonchus, about 20–30-flowered. The short strigose hairs of the achenia promptly emit long spiral threads when moistened.

† † Leaves sharply serrate-toothed: heads radiate.

18. *S. triangularis* (Hook.): glabrous throughout; stem tall; simple, striate, leafy; leaves deltoid-triangular-lanceolate, acuminate, very sharply and coarsely toothed, petioled; heads (large) in a fastigiate compound corymb; bracteoles and calyculate scales few, linear-subulate; scales of the cylindraceous involucre about 15, linear, sphacelate at the tip; rays 10–12; achenia glabrous.—*Hook.! fl. Bor.-Am.* 1. *p.* 332, *t.* 115; *DC. l. c. p.* 432.

β. smaller; leaves less acuminate, and less deeply and sharply toothed.

Moist prairies among the Rocky Montains, between lat. 52° and 55°, *Drummond! β.* Wind River Chain of the Rocky Mountains, about lat. 42°, at the altitude of 7000 feet, *Lieut. Fremont!*—A stout handsome species: the leaves about 3 inches long, unequally and incisely toothed, on distinct petioles, tapering from the remarkably truncate base to the acuminate apex. Heads half an inch long. Achenia not striate.

19. *S. Serra* (Hook. l. c.): herbaceous, erect, very glabrous; stem striate; leaves petioled, broadly lanceolate, acuminate, strongly and sharply toothed, mostly cordate at the base; the uppermost linear-lanceolate, acuminate at both ends; heads numerous in a compound corymb; the involucre furnished with linear-subulate accessory scales; rays 6–7, linear, remote, twice the length of the involucre; achenia glabrous. *DC.* (under the following name.)—S. longidentatus, *DC. prodr.* 6. *p.* 418.

Oregon; "common on the banks of the Wallawallah, Flathead, and Spokan Rivers, (2–3 feet high)," *Douglas.*—Flowers rather small, very numerous, in a dense corymbose panicle. Scales of the involucre scarcely sphacelate at the tip. *Hook.*—While we adopt the anterior name of Hooker, we copy the character of De Candolle; who alone has described the lower leaves. It is doubtless nearly allied to S. Sarracenicus.

20. *S. Andinus* (Nutt.): glabrous; stem angled, very leafy; leaves linear-lanceolate, sharply denticulate, acute at both ends, subsessile; heads (small) cylindraceous, forming a compound paniculate corymb; bracteoles and calyculate scales few, subulate-setaceous; rays 6–8, the disk-flowers about 20; achenia glabrous.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 409.

Vallies of the higher Rocky Mountains (lat. 41°), about 6000 feet above the level of the sea, *Nuttall!* July.—A foot high. Leaves 3–5 inches long, a half to three-fourths of an inch wide. Corymb often irregular. *Nutt.*—May not this be a subalpine form of the preceding?

† † † Leaves toothed: rays none.

21. *S. rapifolius* (Nutt.): very glabrous throughout; stems angled, paniculately branched, leafy; leaves thickish, oblong, unequally and very sharply toothed; the radical and lowest cauline oval or obovate-oblong, narrowed into a winged petiole, and often sparingly incised at the base; the upper clasping by a subcordate base; heads (small) in numerous small corymbs, on short many-bracteolate pedicels, slightly calyculate; the calyculate scales and bracteoles very small and subulate; scales of the cylindraceous about 15-flowered involucre 8–10, oblong, thickish; rays none; achenia glabrous.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 409.

Upper branches of the Platte near the Rocky Mountains, *Nuttall!* Sweet-Water River and North Fork of the Platte, *Lieut. Fremont!* Aug.—Plant 6–20 inches high. Cauline leaves 3–4 inches long, 1–2 wide, obtuse or acute, somewhat fleshy. Heads much smaller than in S. Cacaliaster. Scales of the involucre thickish, with hyaline margins, not sphacelate. Pappus rather shorter than the yellow corolla. Achenia striate.

22. *S. aronicoides* (DC.): stem herbaceous, simple, arenose-hirsute;

lower leaves ovate, tapering into a petiole partly clasping at the base, unequally toothed, glabrous above, arenose beneath; the upper sessile, oblong, acute, partly clasping by the auriculate somewhat adnate base, coarsely toothed, arenose on both sides; corymb terminal, crowded; the calyculate involucral scales about 10, acuminate, arenose; rays none; the tubular flowers 10–12; achenia glabrous.—*DC. prodr.* 6. *p.* 426.

California, *Douglas.*—Herb 8–10 inches high. Lower leaves 5 inches long, including the petiole. *DC.*

† † † † Radical leaves undivided; the cauline incised or pinnatifid: involucre nearly ecalyculate.

23. *S. aureus* (Linn.): glabrous, or mostly somewhat arachnoid-woolly when young; radical leaves orbicular or roundish-ovate, mostly cordate, crenate-serrate, petioled; the lower cauline lyrate; the upper lanceolate, laciniate-pinnatifid, sessile or partly clasping; the segments mostly toothed at the apex; corymb somewhat umbellate; rays 8–12; achenia glabrous.—*Linn. spec.* 2. *p.* 870; *Michx.! fl.* 2. *p.* 120; *Pursh! fl.* 2. *p.* 530; *Ell. sk.* 2. *p.* 331; *Bigel.! fl. Bost. ed.* 2. *p.* 307; *Hook.! fl. Bor.-Am.* 1. *p.* 333; *Darlingt.! fl. Cest. p.* 497; *DC.! prodr.* 6. *p.* 432. S. tussilaginoides, *Walt. Car. p.* 208. S. fastigiatus, *Schweinitz! in Ell. l. c.* S. gracilis, *Pursh! fl.* 2. *p.* 529; *DC.! l. c.* (a depauperate state.)—Earliest radical leaves, small and round, seldom cordate, on shorter petioles; the succeeding larger, on long petioles.

β. obovatus: radical leaves varying from roundish-obovate to oblong-spatulate.—S. obovatus, *Muhl. in Willd. spec.* 3. *p.* 1999; *Pursh, l. c.; Ell. l. c.; Darlingt.! l. c.; DC.! l. c.* S. aureus β. gracilis, *Hook.! l. c.* —A large state, with heads of unusual size, is S. Balsamitæ β. majus, *Hook.! l. c.*

γ. borealis: radical leaves thickish and somewhat coriaceous, obovate, cuneate-spatulate, and oval, mostly crenulate-toothed at the apex only, or some of them entire; stem short (5–12 inches high); corymb of few or numerous heads.—S. aureus, partly, *Hook.! l. c.* S. cymbalarioides, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 412.

δ. discoideus (Hook. l. c.): rays wanting.—A rayless state of var. β. is S. elongatus, *Pursh! fl.* 2. *p.* 529; of var. γ. (from Labrador!) is S. pauciflorus, *Pursh! l. c.* (heads rarely solitary!): an Oregon plant, with some of the oblong radical leaves sinuate-toothed or lyrate is S. debilis, *Nutt.! in trans. Amer. phil. soc. l. c.:* an Arctic American form, with the primordial radical leaves often as in var. γ. but the succeeding thin, ovate, and sharply serrate-toothed (corymb of few or several heads) is S. discoideus, *Hook.! l. c.*

ε. Balsamitæ: glabrous or more downy; radical leaves oval, oblong, spatulate, and lanceolate (often varying greatly on the same individual, crenate or rather sharply crenate-toothed, some of them occasionally lyrate-incised; achenia either glabrous or strigose-puberulent on the angles.—S. Balsamitæ, *Muhl. in Willd.! spec. l. c.* (*& in fl. Lancastr. ined.*, when the achenia are said to be glabrous); *Pursh! l. c.; Darlingt.! l. c.; DC.! l. c.* excl. syn. S. Plattensis, *Nutt.! in trans. Amer. phil. soc. l. c.*—Specimens collected at the same time from the same locality, not distinguishable in any other respect, have the achenia either glabrous, or minutely hairy on the angles; the latter are most common.

ζ.? lanceolatus (Oakes): stem slender, loosely and sparingly corymbose at the summit; leaves thin, lanceolate-oblong; the radical on long petioles, unequally and sharply serrate, subcordate or cuneate at the base; the cauline few, sessile, laciniate-pinnatifid towards the base; rays 6–8; achenia glabrous.—*Oakes! in Hovey's mag., & in Thompson's gazetteer of Vermont.*

Arctic America! to Louisiana! and from Labrador! to Oregon! α. in swamps or meadows; β. in drier places; ε. in rocky places; γ. (and δ. chiefly) Arctic America! to the Rocky Mountains! &c. ζ. Cedar Swamp, Brownington, Vermont, *Dr. Robbins!* April–June.—A polymorphous species, 10–30 inches high; the S. Balsamitæ and S. obovatus pass by numerous transitions into the typical S. aureus.

24. *S. Elliottii:* at length glabrous; stem simple, often nearly naked; radical leaves thickish, oval-obovate or roundish, crenate-serrate, tapering into a winged petiole which is much shorter than the lamina, or nearly sessile; the cauline few and small, sessile, laciniate-pinnatifid; the upper reduced to bracts; corymb small; rays 9–12; achenia glabrous.—S. obovatus, *Ell. sk.* 2. *p.* 330 (as to the Southern plant described), not of *Muhl. &c.* 32
Pennsylvania? to Georgia! Florida! and Alabama! May.—About a foot high, the stem often scape-like and almost leafless, floccose-woolly when quite young. Radical leaves crowded, 2–3 inches in diameter, frequently coriaceous when mature, often sharply serrate or incised towards the narrowed base, occasionally sinuate-incised or almost pinnatifid. Heads as large as in S. aureus.

25. *S. tomentosus* (Michx.): clothed with a more or less deciduous canescent wool; radical leaves oblong or oval-lanceolate, mostly obtuse at both ends, crenate-toothed, on slender petioles; the upper sessile; corymb fastigiate; rays 12–15, elongated; achenia strigose-pubescent on the angles.—*Michx.! fl.* 2. *p.* 119; *Ell. sk.* 2. *p.* 329; *DC. prodr.* 6. *p.* 433. S. integrifolius, β. heterophyllus, *Nutt.! gen.* 2. *p.* 165.

β. smaller, very canescent; radical leaves obovate-spatulate and oval, tapering into short petioles, slightly toothed; the cauline incisely pinnatifid.—Cineraria heterophylla, *Pursh, fl.* 2. *p.* 528?

Virginia! to Georgia! Florida! & Arkansas! β. Blue Mountains (of Pennsylvania, *Pursh*) of Virginia, *Mr. Buckley!* April–June.—Stem 1–2 feet high, often nearly leafless, except at the base. Radical leaves on petioles 3–6 inches long, sometimes nearly entire, often sharply toothed near the base. Heads larger than in S. aureus.

26. *S. canus* (Hook.): tomentose and canescent throughout; radical leaves oblong-spatulate, tapering into short petioles, entire; cauline linear-lanceolate, sessile, partly clasping, sinuate-pinnatifid, or laciniate-toothed towards the base; corymb mostly simple; rays 8–12, short; achenia glabrous.—*Hook.! fl. Bor.-Am.* 1. *p.* 333, *t.* 116; *DC. l. c.* S. integrifolius, *Nutt.! gen.* 2. *p.* 165. S. Purshianus, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 412. Cineraria integrifolia β. minor, *Pursh! fl.* 2. *p.* 528, (excl. syn.) as to the Missouri plant.

β. upper surface of the leaves becoming somewhat glabrous. *Hook. l. c.*

Upper Missouri, *Lewis, Nuttall!* and Saskatchawan, *Drummond!* β. Lake Huron, *Dr. Todd.*—Plant 6–12 inches high, somewhat cæspitose; the leaves white with a persistent tomentum.—The achenia as figured by Hooker are sparsely hairy along the angles near the summit; which is not the case in any of the specimens (of Drummond or others) that we have examined.

† † † † † Leaves all pinnately parted: involucre calyculate.

27. *S. Douglasii* (DC.): clothed with a deciduous arenose-canescent pubescence; stem striate, leafy; leaves linear, acute, entire, or mostly furnished towards the base with 1–3 pairs of small and remote narrowly linear lobes, nearly glabrous when old, the margins revolute; heads few, in a naked and loose compound corymb; the subulate calyculate scales or bracteoles

nearly as long as those of the involucre; "achenia somewhat glabrous."—*DC.! prodr.* 6. *p.* 429.

California, *Douglas!*—Leaves 3 inches long, 2 lines wide. Rays 11–13; the disk-flowers about 60. *DC.*

28. *S. filifolius* (Nutt.): suffruticose, much branched; the branches diffuse, very leafy to the summit; leaves pinnately 5–9-parted; the segments very narrowly linear, entire, obtusish, often unequal, mostly with revolute margins; heads (rather large) corymbose, on short peduncles, calyculate with a few small subulate scales; rays about 7, linear, somewhat elongated; achenia strigose-canescent.

α. Jamesii: densely tomentose-canescent; the wool evidently more or less deciduous.—S. filifolius, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 414. (Described from an imperfect specimen in *herb. Torr.*)

β. Fremontii: glabrous, or obscurely arachnoid.

On the Upper Missouri or Platte, *Dr. James! β.* On the Lower Platte, near the "Chimney," *Lieut. Fremont!* Aug.–Sept.—Segments of the leaves an inch or less in length, half a line wide; the rachis about the same width. Heads smaller than in the following species. Rays golden yellow.

29. *S. Riddellii:* glabrous throughout; stem terete, very leafy, corymbose at the summit; cauline leaves pinnately 5–9-parted; the segments narrowly linear, obtuse, entire, flat, somewhat dilated towards the apex, (thickish and rather rigid); heads (large and showy) on short peduncles, disposed in a compound corymb, calyculate with subulate scales; rays about 12, linear, elongated; achenia minutely puberulent.—S. fragrans, *Riddell! mss.*, not *Fisch.*

Texas, *Dr. Riddell!*—♃? A stout species, apparently 1–2 feet high, leafy to the summit. Radical leaves unknown: cauline not at all auriculate or dilated at the base: the segments an inch or more in length, and 1–2 lines wide: the rachis about the same width, and entire. Heads much larger than in S. abrotanifolius: scales of the involucre 16–18, linear-lanceolate, not sphacelate, nearly the length of the disk. Rays golden yellow. Pappus very white, as long as the disk-corolla.

30. *S. eremophilus* (Richards.): glabrous; stem striate, tall, branching; leaves membranaceous, interruptedly pinnatifid, the lower somewhat bipinnatifid; the segments lanceolate or oblong-linear, unequal, acute, often toothed; heads in a compound corymb: the calyculate scales few and loose, nearly as long as the cylindrical involucre; rays (about 9) linear, spreading; achenia nearly glabrous.—*Richards.! appx. Frank. journ. ed.* 2. *p.* 31; *Hook.! fl. Bor.-Am.* 1. *p.* 334.

Woods of the Saskatchawan (*Drummond*) to Fort Franklin on the Mackenzie River, *Richardson!*—Stem 2–3 feet high. Leaves ample; the lower 5–8 inches long.

† † † † † † Leaves all bipinnately dissected: involucre nearly ecalyculate.

31. *S. Millefolium:* floccose-lanuginous when young, at length glabrous; stems striate, cæspitose, corymbose at the summit; leaves chiefly radical, petioled, bipinnately divided; the segments often 2–5-parted, linear, obtuse; cauline leaves few, sessile, irregularly 1–2-pinnately dissected; corymb dense, fastigiate, mostly compound; scales of the hemispherical minutely 1–2-bracteolate involucre about 20, linear; rays 9–12, oblong, short; achenia minutely hairy on the angles; pappus equalling the corolla of the disk.

Mountains of North and South Carolina: "Carolina, *Fraser*," *in herb. Lambert!* Whiteside Mountain, North Carolina, *Mr. Curtis!* Table Mountain, S. Carolina, *Mr. Buckley!* June.—♃ A foot or more high. Leaves rather fleshy; the numerous segments 2–3 lines long. Heads smaller than is usual in S. aureus. Scales of the involucre greenish, with scarious margins, not sphacelate.—Were this remarkable plant a northern species, it might be supposed to prove the S. Canadensis; which has never been recognized.

* * * * * *Perennial: heads radiate, solitary or nearly so.*

32. *S. resedifolius* (Less.): dwarf, glabrous; stems mostly simple and terminated with a single head, leafless above; radical leaves petioled; the exterior rounded, crenate-sinuate or lobed; the interior lyrate-pinnatifid, with the segments entire or 2–3-lobed; the cauline oblong, sessile, pinnatifid at the base, woolly in the axils; scales of the nearly ecalyculate involucre lanceolate; rays 12–13, elongated; achenia minutely and sparsely puberulent; pappus a little shorter than the corolla of the disk.—*Less.! in Linnæa*, 6. *p.* 243; *Hook.! fl. Bor.-Am.* 1. *p.* 333, *t.* 117; *DC.! prodr.* 6. *p.* 347. Cineraria lyrata, *Ledeb.! fl. Alt.* 4. *p.* 102 (var. with purplish involucre); *Reichenb. ic. bot. t.* 101; *Hook. & Arn.! bot. Beechey*, *p.* 126.
Arctic America from Kotzebue's Sound! to Fort Franklin! &c.—Stems 2–6 inches high, sometimes sparingly branched above. Heads rather large. —This is not improbably the S. Cymbalaria of Pursh.

33. *S. subnudus* (DC.): very glabrous throughout; stem simple, slender, nearly leafless above and usually bearing a single head; radical leaves obovate, toothed at the apex, on slender petioles; the cauline few, sessile, oblong, incised or somewhat pinnatifid, not woolly in the axils; scales of the slightly calyculate involucre linear-lanceolate, acuminate; rays 8–12, elongated; achenia glabrous, striate; pappus nearly equalling the corolla of the disk.—*DC.! prodr.* 6. *p.* 428; *Nutt.! in trans. Amer. phil soc. l. c. p.* 412.
Cascade Mountains on the Oregon, *Dr. Gairdner! Douglas!* Wind River Chain of the Rocky Mountains, at the altitude of 7000 feet and upwards, *Lieut. Fremont!* Aug.—Stems often decumbent at the base, 6–10 inches high, sometimes bearing 2 heads, which are about as large as in S. aureus. Limb of the radical leaves half an inch in length, occasionally somewhat lyrate.—Allied to the preceding.

34. *S. Fremontii:* dwarf, glabrous; stems ascending, leafy, often branching; the branches naked at the summit and terminated by a solitary head; leaves somewhat fleshy, obovate and spatulate-oblong, very obtuse, sometimes mucronulate; the upper sinuate-toothed or slightly lyrate, sessile; the lowest angulate-toothed or nearly entire, tapering into a short margined petiole; scales of the ecalyculate involucre in a single series, linear-lanceolate; rays 8–10, oblong-linear; achenia (immature) puberulent; pappus equalling the corolla of the disk.
On the Wind River Chain of the Rocky Mountains, just below the limits of perpetual snow, *Lieut. Fremont!* Aug.—Stems 3–5 inches high. Leaves an inch or more in length. Heads about half an inch in length; the cylindrical-campanulate involucre many-flowered, subtended by one or two small lanceolate bracteoles.

35. *S. frigidus* (Less.): stem simple, bearing a single head, glabrous, or clothed with deciduous floccose wool and blackish-purple hairs; leaves elliptical-oblong, obtuse, with short petioles [the cauline sessile and partly clasping], glabrous or hirsute; the margins revolute, entire or slightly denticulate; involucre ecalyculate, hispid with purple hairs; rays numerous, oblong-elliptical; achenia glabrous; pappus as long as the tube of the disk-flowers. *DC.*—*Less. in Linnæa*, 6. *p.* 239; *Hook.! fl. Bor.-Am.* 1. *p.* 334. *t.* 112; *DC. prodr.* 6. *p.* 347. Cineraria frigida, *Richards. appx. Frankl. journ. ed.* 2. *p.* 31; *Hook. & Arn.! bot. Beechey*, *p.* 126. C. atropurpurea, *Ledeb. in mem. acad. St. Petersb.* 5. *p.* 274.

Arctic America, from lat. 64°, to the shores of the Northern Sea! Kotzebue's Sound! &c.—Stems 1–5 inches high. Head large.—Varies greatly as to pubescence, and the short purplish hairs of the involucre are sometimes nearly wanting.

36. *S. Pseudo-Arnica* (Less.): glabrous or arachnoid-tomentose at the summit; stem erect, simple, leafy, bearing one or very few [very large] heads; lower leaves oval-oblong, repand-toothed, narrowed into a short petiole; the upper sessile, lanceolate; scales of the involucre in few series, the exterior linear, acuminate, as long as the interior; rays many-nerved; achenia glabrous; pappus scabrous, equalling the disk-corolla, *DC.*—*Less. in Linnæa*, 6. *p.* 240; *Hook.! fl. Bor.-Am.* 1. *p.* 334, *t.* 113; *DC.! prodr.* 6. *p.* 358. Arnica maritima, *Linn. spec.* 2. *p.* 885 (ex. *Less.*); *Pursh! fl.* 2. *p.* 528; *Hook. & Arn.! bot. Beechey*, *p.* 126. A. Doronicum, *Pursh, fl.* 2. *p.* 527? Cineraria carnosa, *Pylaie! herb.*

Labrador! and Newfoundland! to Kotzebue's Sound! and Unalaschka!—Stem stout, 2 inches to a foot high. Heads (1–4,) an inch or more in diameter.

‡ *Obscure species.*

37. *S. Canadensis* (Linn.): heads radiate; leaves bipinnate, linear. *Linn. spec.* 2. *p.* 869.

Canada, *Kalm.*—Stem erect, smooth. Leaves bipinnate, linear, glabrous; the uppermost simply pinnate. Corymb terminal, compound, fastigiate, yellow. Involucre rufescent. *Linn.*

38. *S. Kalmii* (Nutt.): heads paniculate; leaves pinnatifid, somewhat villous; the segments sinuate; stem herbaceous. *Linn. spec. ed.* 2. *p.* 1244, under the name of Cineraria Canadensis.

Canada, *Kalm.*—Like Cineraria maritima, but the leaves instead of tomentose are subvillous, especially beneath. Rays spreading, not revolute. Stem annual, not perennial. Involucre a little sphacelate at the apex. *Linn.*—We are inclined to suspect some mistake respecting the habitat of several Linnæan species said to have been collected in Canada by Kalm.

39. *S. Cymbalaria* (Pursh): radical leaves petioled, subrotund, truncate at the base, with the petioles appendiculate and somewhat lyrate; the cauline sessile, linear, incisely toothed; stem somewhat one-flowered. *Pursh, fl.* 2. *p.* 530.

North West Coast of America, *Nelson, in herb. Banks.*—May it not be the same with S. residifolius?

40. *S. pauperculus* (Michx.): dwarf; stem very simple, rigidly erect, somewhat naked; leaves all lanceolate, a few of the radical somewhat entire; the others sparingly incisely toothed or serrate [or subpinnatifid]; corymb of few [2–4] heads; involucre nearly glabrous; rays rather small. *Michx. fl.* 2. *p.* 120.

Canada near the Lakes, *Michaux.* Newfoundland, *Pylaie.* (*V. sp. in herb. Michx. & herb. Pylaie.*)—Plant 5–7 inches high.—Perhaps not different from the remarkable and ambiguous S. aureus *var.* lanceolatus.

S. ciliatus, Walt., is most probably Erigeron Canadense.

S. opuntiæfolius, Raf. fl. Ludov.

Cineraria Caroliniensis (Walt. Car. p. 207): heads paniculate; leaves petioled, oblong, denticulate, smooth; stem herbaceous.

164. TETRADYMIA. *DC. prodr.* 6. *p.* 440; *Deless. ic.* 4. *t.* 60.

Tetradymia & Lagothamnus, *Nutt.*

Heads 4- or sometimes 5–9-flowered; the flowers all tubular and perfect. Involucre of 4 or 5 (rarely 6) oval or oblong and obtuse coriaceo-chartaceous carinate-concave scales, somewhat in two series. Receptacle small, naked. Corolla with a slender tube and a deeply 5-cleft limb; the lobes linear, spreading, mostly furnished with an indistinct mid-nerve. Anthers exserted. Branches of the style tipped with a very short and obtuse puberulent cone. Achenia oblong, terete, villous with long and soft denticulate hairs. Pappus at first shorter than the corolla, composed of numerous strongly denticulate and rather rigid unequal capillary bristles.—Herbaceous? or shrubby canescently tomentose branching plants (natives of dry barren plains in and near the Rocky Mountains); the leaves linear, entire, sessile, alternate, often fascicled; the primary frequently converted into spines. Heads corymbose or racemose, and often clustered at the extremity of the branches, rather large. Flowers bright yellow.

§ 1. *Involucre of* 4–5 *scales,* 4-*flowered: the villous hairs of the achenia much shorter than the very copious pappus.*—EUTETRADYMIA.

1. *T. canescens* (DC.): herbaceous? unarmed; silvery-tomentose; leaves scattered on the simple stems or branches, narrowly linear, rather rigid, mucronate; peduncles as long as the racemose-corymbose heads; scales of the involucre 4.—*DC.! in Deless. ic. sel.* 4. *t.* 60, *& prodr. l. c.; Hook. & Arn.! bot. Beechey, suppl. p.* 360.

Interior of Oregon or California, *Douglas!*—Leaves an inch and a half long, scarcely a line wide, none of them fascicled or spinescent. Flowers fully half an inch long. Hairs of the achenia, as in all the species of this section, as long as or longer than the achenium, and strongly denticulate under a lens, especially the uppermost, which might readily be confounded with the pappus.

2. *T. inermis* (Nutt.): shrubby, much branched, unarmed, silvery-canescent; leaves thickish, short, linear-lanceolate or somewhat spatulate, obtuse or mucronulate-acute, either scattered or fascicled; heads corymbose-clustered, on short peduncles; scales of the involucre mostly 4.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 415.

Dry barren plains west of the Rocky Mountains, particularly near Lewis River, *Nuttall!* Also east of the Rocky Mountains on hills of the upper part of the North Fork of the Platte, near Deer Creek; and on the Wind River Chain at the height of 7000 feet, *Lieut. Fremont!* Aug.—Shrub 1–3 feet high, not spinescent. Leaves 6–9 lines long, 1–2 wide, canescent with a close tomentum. Heads and flowers smaller than in the preceding species; to which some states are very closely allied.

3. *T. Nuttallii:* shrubby, much branched, woolly when young, canescent; primary leaves mostly converted into subulate spines; the others densely fascicled in their axils, thickish, linear-spatulate, obtuse, the tomentum somewhat deciduous; heads fascicled and in corymbose clusters, on very short peduncles; scales of the involucre 4–5.—T. spinosa, *Nutt.! l. c.*, not of *Hook. & Arn.*

Dry plains of Lewis River, with the preceding, and on Ham's Fork of the Colorado of the West; common, *Nuttall!* July.—Shrub 2–3 feet high, growing in tufts like a Furze. Spines sharp, spreading or recurved, half an inch or a little more in length, as long as the fascicled leaves. Heads and flowers nearly as in the preceding.

§ 2. *Involucre of 5–6 scales, 5–9-flowered: the soft villous hairs which densely clothe the achenia as long as the less copious pappus!*—LAGOTHAMNUS, Nutt.

4. *T. spinosa* (Hook. & Arn., l. c.): shrubby, much branched, decumbent; the branches and scattered or racemose heads very woolly; primary leaves converted into acerose often recurved spines; the others fascicled in their axils, very small, fleshy, linear, obtuse, glabrous.—Lagothamnus microphyllus & L. ambiguus, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 416. Snake Country, on Lewis River, *Mr. Tolmie.* Arid plains with the preceding, common, *Nuttall!* July–Aug.—Shrub 3–4 feet high. Leaves usually much shorter than the spines, 2–3 lines long, somewhat terete, always glabrous. Heads pretty large, on short peduncles, often nodding, most frequently 5-flowered. Pappus of about 30 bristles, which are unequal as in the preceding species, but are nearly concealed by the singular hairs of the achenia, which perfectly simulate a pappus, and with which they were apparently confounded by *Hook. & Arn. l. c.* These copious very white denticulate hairs only differ from those of true Tetradymia by their greater length, in this species nearly equalling the corolla and real pappus.

165. CROCIDIUM. *Hook. fl. Bor.-Am.* 1. *p.* 335, *t.* 118.

Heads many-flowered, radiate; the ray-flowers about 12, pistillate; the disk-flowers tubular, perfect. Scales of the involucre 8–12, oblong-ovate, herbaceous, with somewhat scarious margins, spreading, nearly in a single series. Receptacle oblong-conical, naked, papillose. Rays oblong; the ligule with a short filiform tube: the corolla of the disk with a slender tube and a campanulate 5-cleft limb; the lobes spreading. Branches of the style short; those of the ray very obtuse, nearly included in the tube; of the disk tipped with a flattened triangular appendage. Achenia obovoid-oblong, obscurely 5-angled, canescent with somewhat caducous clavate-papilliform hairs (which when moistened split from the apex into two valves, and emit two attenuated spiral threads); those of the disk furnished with a deciduous pappus of 15–20 strongly barbellate capillary bristles, rather shorter than the corolla; of the ray similar, but destitute of pappus.—A small annual, sending up numerous slender and mostly simple stems (a span high) from the same root, which are naked above, and bear solitary heads. Leaves loosely floccose-woolly when very young, at length glabrous except in the axils, which are lanigerous; the radical spatulate, somewhat toothed or incised; the cauline linear, sessile. Corolla of the disk and ray somewhat deciduous, bright yellow.

C. multicaule (Hook.! l. c.)—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 441.

On rocks of the Oregon near Fort Vancouver, *Douglas! &c.*, and at the mouth of the Wahlamet, *Nuttall!*—An elegant little plant, allied in several respects to Blennosperma.—Hooker's figure and description do not altogether correspond, and neither are correct as respects the achenia, which are not compressed, tuberculate, nor crenate-margined in our specimens; nor are they very smooth, except when the papilliform hairs fall away. When thrown into water, the spiral filaments which the latter emit form a gelatinous mass around the achenium.

166. ARNICA. *Linn.; Gærtn. fr. t.* 173; *Schkuhr, handb. t.* 248; *DC. l. c.*

Heads many-flowered, radiate; the ray-flowers pistillate, and often furnished with sterile stamens; the disk-flowers tubular, perfect. Scales of the campanulate involucre lanceolate, equal, somewhat in two series. Receptacle flat, fimbrillate or a little hairy. Tube of the corolla hairy; the limb in the disk-flowers 5-toothed. Style in the disk-flowers with long pubescent branches, either truncate or tipped with a short cone. Achenia terete, tapering to the base or fusiform, somewhat ribbed, commonly hairy. Pappus a single series of rather rigid barbellate or strongly scabrous capillary bristles. —Perennial herbs (of the colder regions of the northern hemisphere); with simple stems, bearing solitary or somewhat corymbose large heads. Leaves undivided, opposite! Flowers yellow.

1. *A. nudicaulis* (Ell.): hirsute; leaves all sessile, 3–5-nerved, very hirsute above, entire or slightly toothed; the cauline 1–2 pairs, small, remote, ovate or oblong; the radical clustered; heads several, on slender corymbose peduncles; achenia nearly glabrous.—*Ell.! sk.* 2. *p.* 333; *DC.! l. c.* A. Claytoni, *Pursh, fl.* 2. *p.* 527. Doronicum foliis plantaginis, &c., *Clayt.* D. acaule, *Walt. Car. p.* 205. D. nudicaule, *Michx.! fl.* 2. *p.* 121.
Damp pine barrens, &c., Virginia! to Florida! April–May.—Stem 1–3 feet high; the pubescence somewhat viscid. Rays 12–15, twice the length of the involucre, bright yellow. Achenia very slightly and sparsely pubescent when young, at length glabrous.

2. *A. angustifolia* (Vahl): more or less villous; stem bearing a single head; leaves lanceolate, acute, entire or sparingly denticulate, 3-nerved; the radical on short petioles; the cauline 1–3 pairs, sessile; involucre woolly; achenia hirsute.—*Vahl, fl. Dan. t.* 1524; *DC.! prodr.* 6. *p.* 317. A. montana β. alpina, *Linn. spec. ed.* 2. *p.* 1245; *R. Br.! in Parry's voy. p.* 279; *Richards.! appx. Frankl. journ. ed.* 2. *p.* 30; *Hook.! fl. Bor.-Am.* 1. *p.* 330. A. alpina, *Læst.; Wahl. fl. Suec.* 2. *p.* 530. A. plantaginea & A. fulgens, *Pursh! fl.* 2. *p.* 527.
β. *Lessingii:* achenia glabrous! (involucre turbinate; anthers blackish.) —A. alpina, *Less. in Linnæa*, 6. *p.* 325. A. angustifolia, *Hook. & Arn. bot. Beechey, p.* 126.
Greenland! Labrador! and the Arctic coast! to Saskatchawan! and the Upper Missouri and Platte, in and near the Rocky Mountains! β. Kotzebue's Sound! &c.—Plant 4–10 inches high; some of the northern states (such as A. plantaginea, *Pursh*, from Labrador, and those from the Arctic islands) too closely approaching A. montana; but the more southern forms appear quite distinct from that species.

3. *A. Chamissonis* (Less.): hirsute-pubescent; stem simple or sometimes branched above, bearing 3 or more heads, leafy to the summit; leaves (am-

ple) oblong-lanceolate, acute, sparingly denticulate or entire, tripli–quintuplinerved, pubescent or somewhat villous; the cauline 4–7 pairs, nearly equal, partly clasping; the lowest tapering to the base; rays short; achenia minutely hirsute.—*Less.! in Linnæa*, 6. *p*. 238; *DC.! l. c.* A. montana *a.*, *Hook.! l. c.* A. foliosa, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p*. 407.

Unalaschka, *Chamisso!* Rocky Mountains on the Colorado of the West, *Nuttall!* to the Woody Country of Subarctic America, *Richardson! &c.*—Stem 1–2½ feet high. Leaves 3–5 inches long. Heads on slender peduncles. Pappus plumose-serrate. Achenia (in our original as well as other specimens) *less* hirsute than in A. montana.

4. *A. mollis* (Hook.): villous-pubescent; stem leafy, bearing 1–5 heads; leaves thin and flaccid, veiny, nearly glabrous when old, denticulate or toothed; the cauline 3–5 pairs, somewhat equal; the upper ovate-lanceolate and closely sessile; the lower lanceolate or oblong, narrowed at the base, or tapering into a margined petiole; scales of the hirsute involucre acuminate; achenia hirsute; pappus almost plumose.—*Hook.! fl. Bor.-Am.* 1. *p*. 331. A. lanceolata, *Nutt.! in trans. Amer. phil. soc. l. c. p*. 408.

Alpine rivulets of the (northern) Rocky Mountains, *Drummond!* Moist places on the White Mountains of New Hampshire, in the alpine and subalpine region, *Dr. Pickering! Mr. Oakes! Nuttall! Mr. Tuckerman!* Mountains of New York, near the sources of the Hudson River!—Stem 10–30 inches high; the internodes mostly longer than the leaves. Upper leaves obscurely 3-nerved from the broad base; the lower somewhat triplinerved; the radical oblong-spatulate, petioled; the upper varying from oblong-ovate and obtuse to lanceolate from a broad base, and tapering to an acute point. Heads smaller than in A. montana; the pappus nearly plumose to the naked eye.

5. *A. latifolia* (Bongard): stem sparingly hirsute-pubescent, or nearly glabrous, bearing 3–5 heads; leaves thin and flaccid, ovate, unequally and often very sharply serrate, veiny, minutely pubescent with short hairs above, glabrous (except the veins) beneath; the cauline about 3 pairs, often acute, sessile, or the lowermost somewhat petioled; the radical subcordate, obtuse, on slender petioles; scales of the involucre lanceolate, acuminate, hairy towards the base; achenia almost glabrous.—*Bong.! veg. Sitcha, l. c. p*. 147; *DC.! l. c.* A. Menziesii, *Hook.! fl. Bor.-Am.* 1. *p*. 331, *t*. 111; *Nutt. l. c.*

North-West Coast, from Sitcha! Observatory Inlet! and Fort Vancouver! to the Rocky Mountains!—Stems 1–2 feet high. Peduncles slender. Scales of the campanulate involucre and the rays usually 11 to 14, in the Sitcha specimens as well as others; in which also the achenia are not perfectly glabrous, but pubescent with scattered hairs near the summit.

6. *A. cordifolia* (Hook.): stem sparingly villous, bearing 1–5 heads; leaves nearly all cordate, thin, nearly glabrous, veiny, very unequally and often incisely and sharply serrate; the cauline 2–3 pairs, mostly acute; the uppermost sessile, the others like the radical on slender petioles; scales of the involucre acuminate, villous when young; achenia hirsute-pubescent.—*Hook.! fl. Bor.-Am. l. c.* A. macrophylla, *Nutt. in trans. Amer. phil. soc. l. c.*

Vallies of the Blue Mountains of Oregon, *Douglas! Nuttall*, to the Spokan River, and the east side of the Rocky Mountains, *Drummond!*—Plant 10–20 inches high, often paniculate at the summit; bearing larger heads than the preceding (from which it is perhaps not sufficiently distinct), with about 12 large and long rays. Lower leaves often obtuse, and shorter than the hairy petioles. Achenia becoming glabrous towards the base.

7. *A. amplexicaulis* (Nutt.): sparingly pubescent, or at length glabrous, somewhat cæspitose, very leafy; cauline leaves 5–6 pairs, approximate,

ovate, acute, serrate-toothed, veiny, partly clasping; heads 3–5; scales of the involucre linear-lanceolate, acuminate, sparsely hirsute; achenia hirsute.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Oregon, on rocks at the Falls of the Wahlamet, *Nuttall!*—About a foot high; the leaves, except the uppermost, much longer than the internodes, all closely sessile, 1–2 inches long. Rays small.

‡ *Species unknown to us* (*corolla glabrous*).

8. *A. obtusifolia* (Less.): radical leaves petioled, subspatulate, obtuse, 5-nerved, scabrous; the cauline elliptical; head solitary; scales of the hirsute involucre exceeding the disk, oblong-elliptical; corolla glabrous. *DC. l. c.—Less. in Linnæa*, 6. *p.* 238.

Unalaschka, *Chamisso.*—Stem 6–12 inches high, more or less hirsute. Heads as large as in A. montana: rays sulphur-color, short. Anthers blackish. *Less.*

9. *A. Unalaschensis* (Less. l. c.): radical leaves petioled, subspatulate, obtuse, serrate towards the apex, very scabrous; the cauline oblong-obovate; head solitary; scales of the hirsute involucre exceeding the disk, linear-lanceolate. *DC. l. c.*

Unalaschka, *Chamisso.*—Stem 6 inches high, leafless and hirsute-villous at the summit. Leaves quintupli-nerved. Heads as in the preceding; the rays deeper yellow. *Less.*

167. LESSINGIA. *Cham. in Linnæa*, 4. *p.* 203, *t.* 2, *f.* 2; *Less. syn. p.* 388, *f.* 17; *DC. prodr.* 5. *p.* 351.

Heads many-flowered, homogamous; the marginal flowers larger and radiatiform, obconical, deeply 5-lobed; those of the disk cylindrical-tubulose, 5-toothed. Involucre imbricated. Receptacle naked. Stamens and styles included. [Branches of the style tipped with a dense tuft of rather rigid hairs.] Achenia compressed, not beaked, silky-villous. Pappus a single series of scabrous reddish somewhat rigid capillary bristles.—A procumbent branching annual [tomentose and canescent when young], at length somewhat glabrous. Leaves alternate, thickish; the lowest pinnatifid, the upper toothed at the apex. Heads solitary, terminal and alar. Flowers yellow. *DC.*

L. Germanorum (Cham. l. c.)—*Hook. & Arn. bot. Beechey, suppl. p.* 351.

California, *Chamisso, Douglas.*—Plant with the aspect of an Asterea, but with the style of Senecioneæ. The specific name ought perhaps to be changed to *Californica.* [illegible]

TRIBE V. CYNAREÆ. *Less.*

Heads homogamous or heterogamous, sometimes diœcious. Style in the perfect flowers often nodose-thickened near the summit (sometimes penicillate at the node); the branches either distinct or concreted, puberulent externally; the stigmatic lines reaching their apex, where they are confluent.

CONSPECTUS OF THE SUBTRIBES AND GENERA.

Subtribe 1. CARLINEÆ.—Heads discoid, homogamous. Anthers caudate. Pappus mostly plumose.

168. SAUSSUREA. Pappus double; the few bristles of the exterior denticulate.

Subtribe 2. CENTAURIEÆ.—Heads discoid; the marginal flowers mostly neutral, usually much larger than the others. Pappus never plumose, sometimes wanting.

169. CENTAUREA. Achenia compressed. Pappus of filiform bristles, or none.
170. CNICUS. Achenia terete, strongly striate. Pappus triple, the exterior 10-toothed, the intermediate of 10 long bristles, the inner of 10 short bristles. Marginal sterile flowers small.

Subtribe 3. CARDUINEÆ.—Heads discoid, homogamous, sometimes diœcious. Anthers slightly or not at all caudate. Pappus of plumose or scabrous bristles.

171. CIRSIUM. Achenia smooth. Pappus plumose. Receptacle bristly.
172. CARDUUS. Achenia smooth. Pappus scabrous. Receptacle bristly.
173. ONOPORDON. Achenia rugose, 4-angled. Pappus barbellulate, united at the base into a corneous ring. Receptacle alveolate.
174. LAPPA. Achenia rugose. Pappus scabrous, caducous. Receptacle setose-fimbrillate. Scales of the involucre subulate, uncinate at the apex.

Cynara Scolymus, Linn. (the Artichoke) is said by Nuttall (*Gen. p.* 129) to be somewhat naturalized in some parts of Virginia.

Subtribe 1. CARLINEÆ, *Cass.*—Heads discoid, many-flowered, homogamous, never diœcious. Scales of the involucre in several series, often spinose. Anthers caudate; the tails hairy. Pappus usually plumose.

168. SAUSSUREA. *DC. in ann. mus.* 16. *p.* 107, *& prodr.* 6. *p.* 531.

Heads many-flowered; the flowers all tubular, similar and perfect. Scales of the involucre imbricated in several series, mostly not appendiculate. Receptacle flat, fimbrillate, or with persistent chaff. Corolla with a slender tube and a 5-cleft limb; the throat inflated. Anthers with setiform ciliate or villous tails. Achenia glabrous. Pappus double; the exterior of a few short and denticulate rigid bristles; the interior of a series of stout plumose bristles, which are slightly united at the base.—Herbs (natives of the colder regions of the northern hemisphere); with alternate leaves, and usually corymbose heads. Corolla purple or dark violet.

1. *S. alpina* (DC.): leaves flat, nearly glabrous above, villous-tomentose beneath; the lower ovate-lanceolate and somewhat toothed; the upper oblong-lanceolate and entire; heads few in a close corymb; scales of the cylindraceous involucre appressed, villous, unarmed; the exterior shorter. *DC.! l. c.—Ledeb. ic. Alt.* 1. *t.* 18; *Hook.! fl. Bor.-Am.* 1. *p.* 303.

Serratula alpina, *Linn.; Engl. bot. t.* 599. Circium montanum humile, &c., *Dill. Elth. t.* 70. *f.* 81.

β. densa (Hook.! l. c.): stem somewhat decumbent; leaves nearly glabrous, dense, nearly all narrowly lanceolate; corymb glomerate [inner scales of the involucre very acute].—S. alpina *β.* subacaulis, *Ledeb. ic. Alt. t.* 73?

γ. viridis (DC. l. c.): leaves somewhat glabrous on both sides, elongated lanceolate [or linear], acuminate at both ends, denticulate, shorter than the stem [inner scales of the involucre very acute].—S. alpina, *Hook. & Arn. bot. Beechey, p.* 126. S. alpina *γ.* remotifolia, *Hook.! fl. Bor.-Am.* 1. *p.* 303. S. monticola [printed S. multiflora in 1st ed.], *Richards. appx. Frankl. journ. ed.* 2. *p.* 29. S. angustifolia, *DC. l. c.?* (*Gmel. fl. Sibir.* 2. *p.* 78, *t.* 33?)

Arctic America; *γ.* from Kotzebue's Sound! and the coast between the Mackenzie and Coppermine Rivers, nearly to the Saskatchawan, *Richardson! β.* Higher Rocky Mountains, *Drummond!*—The American seem nearly to correspond with the two Siberian varieties as described by De Candolle. The salient teeth of the leaves in Hooker's var. *β.* are sometimes retrorse.

Subtribe 2. CENTAURIEÆ, *DC.*—Heads discoid, many-flowered; the marginal flowers usually neutral, with the corolla irregular, and much larger than the disk-flowers. Scales of the involucre imbricated, variously appendiculate. Achenia with a more or less lateral basilar areola. Pappus pilose, setose, or chaffy, never plumose, sometimes wanting.

169. CENTAUREA. *Linn.* (excl. spec.); *Less.; DC. prodr.* 6. *p.* 565.

Heads many-flowered; the ray-flowers mostly large and sterile, sometimes wanting. Involucre imbricated, various. Receptacle setose. Achenia compressed. Pappus occasionally wanting or nearly so, but usually composed of scabrous filiform bristles, in one or more series, the inner often smaller and somewhat connivent.—Herbs of varied aspect (chiefly natives of the Mediterranean region and of Middle Asia); with alternate leaves, and solitary heads.

§ 1. *Involucre nearly globose or depressed; the exterior scales with a coriaceo-scarious pectinate-fringed appendage; the inner longer and scarious: rays much longer than the disk: pappus of rigid nearly homogeneous scabrous bristles, somewhat in a single series, caducous: achenia with a nearly terminal areola* (natives of America!).—PLECTOCEPHALUS, Don.

1. *C. Americana* (Nutt.): stem erect, striate-grooved, sparingly branched, thickened under the heads; leaves sessile, glabrous, often scabrous; the lower oblong-ovate, repand-toothed; the upper lanceolate, acute; head (very large) not bracteate; scales of the involucre all with pectinate appendages; rays elongated; the segments very long and slender.—*Nutt.! in jour. acad. Philad.* 2. *p.* 117; *Bart. fl. Amer.-Sept. t.* 50; *Colla, hort. Ripul.* 1. *p.* 119, *t.* 6; *DC.! prodr.* 6. *p.* 575. C. Nuttallii, *Spreng. syst.* 4 (*suppl.*) *p.* 298. C. Mexicana, *DC. l. c.?* Plectocephalus Americanus, *Don, in Brit. fl. gard. ser.* 2. *t.* 51.

Western Arkansas, Louisiana, &c. *Nuttall! Dr. James! Dr. Pitcher! Dr. Leavenworth!* Texas, *Drummond!* Common in cultivation.—① Plant 2–3 feet high, with very large showy heads. Flowers pale purple.

§ 2. *Scales of the ovoid-globose involucre appendiculate; the appendages ciliate-fimbriate, or those of the innermost somewhat lacerate-scarious and roundish: ray-flowers often none: pappus wanting or nearly so!* (*corolla purplish or rarely white*).—JACEA, Cass.

2. *C. nigra* (Linn.): stem erect, branching; radical leaves petioled; the cauline sessile, lanceolate, entire, denticulate, or sparingly angulate-incised towards the base, scabrous; flowers all equal and perfect; pappus much shorter than the achenium.—*Fl. Dan. t.* 906*; Engl. bot. t.* 278*; Hook.! fl. Bor.-Am.* 1. *p.* 301*; DC.! prodr.* 6. *p.* 571*; Bigel.! fl. Bost. ed.* 3. *p.* 339.

Newfoundland! (perhaps indigenous.) Naturalized in the eastern parts of Massachusetts! July–Aug.—♃ Flowers purple. Scales of the involucre black, with a stiff pectinate fringe.

§ 3. *Scales of the ovoid or subglobose involucre surrounded by a membranaceous serrate and ciliate margin: rays larger than the disk: pappus double, often short: heads not bracteate.*—CYANUS, Cass.

3. *C. Cyanus* (Linn.): floccose-tomentose; stem erect, branching; leaves linear, sessile, entire; the lower broader, tapering into a kind of petiole, and toothed or pinnatifid at the base; pappus shorter than the achenium. *DC. prodr.* 6. *p.* 578*; Darlingt. fl. Cest. p.* 435.

Old fields and roadsides, having escaped from gardens; sparingly naturalized in the Northern and Middle States. July–Aug.—① Flowers blue (varying to purplish or white), or those of the disk violet.—*Blue Bottle.*

§ 4. *Scales of the ovoid involucre coriaceous, imbricated; the middle ones ovate, and produced into a long spine, which is naked above but sparingly pectinate-spinulose at its base; the inner oblong and with a simple spine; the outermost spineless: rays 3–5-cleft, shorter than the disk: pappus double; the exterior rigid in several series; the inner short, regular, connivent* (*corolla yellow*).—MESOCENTRON, DC.

4. *C. Melitensis* (Linn.): stem erect, branched; radical leaves pinnately parted, tapering into a petiole; the cauline decurrent, broadly linear, toothed; heads solitary, ovate-globose, somewhat tomentose; innermost scales of the involucre acuminate-spinescent. *DC.! prodr.* 5. *p.* 593*; Hook. & Arn.! bot. Beechey, suppl. p.* 360. C. Partibilcensis, *DC. l. c., fide Hook. & Arn.*

California, *Douglas!* Probably introduced (as also into South America) with grain from Europe.

§ 5. *Involucre ovoid; the middle scales produced into a spine, which is pinnately spinulose at the base; the innermost scarious at the apex: rays equalling or exceeding the disk: pappus short or none* (*corolla purple*).—CALCITRAPA, *Cass.*

5. *C. Calcitrapa* (Linn.): stem diffusely much branched, hairy; leaves sessile, pinnately lobed; the lobes linear, acute, toothed; heads sessile among the uppermost mostly entire leaves; spines of the involucre strong, spreading, grooved above, with 2 or 3 small spinulæ on each side at the base; the

lowest involucral scales scarious and obtuse: pappus none. *DC. prodr.* 6. *p.* 597.

Naturalized in Virginia near Norfolk!—① ②

C. Caroliniana, Walt. is doubtless Stokesia cyanea, *L'Her.*

170. CNICUS. *Vaill.; Gærtn. fr. t.* 162; *DC. diss. & prodr. l. c.*

Heads many-flowered; the ray-flowers sterile, slender, nearly equal to the disk. Scales of the ovoid involucre coriaceous, appressed, produced into a long and rigid pinnated spinose appendage. Receptacle densely clothed with capillary bristles. Achenia terete, smooth, strongly striate, with a large lateral basilar areola. Pappus triple; the exterior, or rather margin of the fruit, of 10 very short corneous teeth; the intermediate of 10 elongated subulate-filiform rigid bristles; the inner of 10 short bristles; the three series regularly alternating with each other.—An annual slightly woolly or villous branching herb (of uncertain nativity); with clasping and somewhat decurrent undivided subpinnatifid leaves, and bracteate heads. Corolla yellow.

C. benedictus (Linn.)—Centaurea benedicta, *Linn. spec. ed.* 2. *p.* 1296.

Sparingly introduced, but scarcely naturalized in New York, &c. Louisiana, *Mr. Leavenworth!* It has also been found in Mexico and Chili, to which it was probably brought from Southern Europe.

Subtribe 3. CARDUINEÆ, *Less.*, *DC.*—Heads discoid, homogamous, many-flowered; the flowers all similar, perfect or diœcious. Scales of the involucre imbricated in several series, often spinose at the apex. Corolla usually curved outwards, the exterior lobe often deeper cleft than the others. Anthers slightly or not at all caudate. Achenia glabrous, with a terminal areola. Pappus composed of slender scabrous or plumose bristles, which are often united into a ring at the base.

171. CIRSIUM. *Tourn.; DC. fl. Fran. ed.* 3, *& prodr.* 6. *p.* 643.

Heads many-flowered; the flowers perfect and similar, rarely subdiœcious. Scales of the involucre imbricated in numerous series, mostly cuspidate or tipped with a prickle. Receptacle bristly. Corolla regularly or often unequally 5-cleft. Anthers more or less produced and lacerate at the base: filaments often hairy. Branches of the style concreted nearly to the apex. Achenia oblong, compressed, glabrous, not ribbed. Bristles of the pappus numerous and somewhat unequal, united into a ring at the base, plumose, merely denticulate (and the stronger ones often slightly clavellate) at the apex.—Herbs, with sessile or decurrent alternate leaves, which are often pinnatifid; the margins and teeth usually spinose. Heads subglobose. Corolla purple, reddish, or ochroleucous.—*Thistle.*

§ 1. *Scales of the involucre more or less unequal, all but the innermost terminating in subulate and spinose spreading appendages: leaves decurrent.* (Eriolepis, *Cass.*)

1. *C. lanceolatum* (Scop.): stem branching, somewhat hairy; leaves decurrent on the stem and forming a spinose lobed wing, pinnatifid, rough and bristly above, somewhat glabrous or arenose-woolly beneath; the lobes and teeth tipped with spines and with spinulose margins; involucre ovoid, nearly bractless, arachnoid; the scales linear-lanceolate, tipped with spines, the exterior spreading; flowers purple. *DC.! prodr.* 6. *p.* 636.—Carduus lanceolatus, *Linn.*; *Engl. bot. t.* 107; *Fl. Dan. t.* 1173; *Hook.! fl. Bor.-Am.* 1. *p.* 302; *Darlingt.! fl. Cest. p.* 436. Cnicus lanceolatus, *Willd.*; *Pursh, fl.* 2. *p.* 506; *Bigel. fl. Bost. ed.* 2. *p.* 292.

Pastures and road-sides throughout the Northern and Middle States! introduced from Europe. Also Newfoundland, (*Hook.*, *DC.*) June–Sept.—② *Common Thistle.*

§ 2. *Scales of the ovoid or globose involucre either mucronate or tipped with a prickle; the innermost always unarmed: filaments hairy.* (Onotrophe, Cass.)

* *Scales of the involucre closely appressed and regularly imbricated in numerous series, the outermost very short, the others successively elongated, all but the innermost tipped with a spreading or recurved acicular prickle (leaves not decurrent, canescently tomentose beneath).*

2. *C. Pitcheri*: canescently tomentose throughout; stem stout, very leafy, simple or sparingly branched; leaves all pinnately parted, rigid; the segments narrowly linear, elongated, with revolute margins, terminated with small prickles, entire, or sparingly and remotely pinnately parted; heads usually several, racemose-spicate in the axils of the upper leaves; scales of the globose involucre oblong-lanceolate, acuminate, with arachnoid margins, appressed, tipped with a small spreading prickle; flowers ochroleucous.—Cnicus Pitcheri, *Torr. in Eaton, man. ed.* 5. *p.* 180.

On the sand banks of Lake Superior, Lake Huron, &c. *Dr. Pitcher!* Shore of Lake Michigan, *Dr. Wright!* June–July.—♃? A foot or more high. Lower leaves 6–8 inches long, with a rigid narrowly margined rachis, which is naked at the base; the segments numerous, 1–4 inches long, 1–2 lines wide. Heads an inch in diameter, terminal, and on very short leafy branches in the axils of the upper leaves. Corolla nearly regular. Filaments somewhat pubescent. The longer bristles of the plumose pappus obscurely thickened at the summit.

3. *C. undulatum* (Spreng.): canescently tomentose throughout; stem low, angled, often branched above; the branches leafy, bearing solitary (pretty large) heads; leaves lanceolate-oblong, partly clasping, sinuate-pinnatifid, plicate-undulate, very white and tomentose beneath; the lobes often incised or 2-cleft, spinose; scales of the subglobose involucre lanceolate, appressed; the exterior tipped with a small and weak spreading prickle; the inner with attenuated membranous tips; flowers reddish-purple.—*DC. prodr.* 6. *p.* 651. C. Douglasii, *DC. prodr.* 6. *p.* 643; *Nutt.! in trans. Amer. phil. soc. l. c. p.* 419. Carduus undulatus, *Nutt.! gen.* 2. *p.* 130.

β. smaller and more slender; leaves more spinose and deeply pinnatifid.

Calcareous Islands of Lake Huron, and Upper Missouri, *Nuttall!* Hills of the Missouri near Fort Pierre, *Mr. Nicollet!* (*a.* & *β.*) Oregon, *Douglas* (probably not California, as given by De Candolle), *Nuttall!* June–July.—

②? Plant 1–2 feet high. Radical leaves sinuate and less spinose. Scales of the involucre at length almost glabrous, often glutinous along the midrib.

4. *C. Hookerianum* (Nutt.): arachnoid-tomentose throughout; stem simple or sparingly branched at the summit; striate; leaves lanceolate or linear, sinuate-pinnatifid, with the lobes often toothed or incised, spinulose, arachnoid above, canescently tomentose beneath; the cauline somewhat clasping; heads (rather small) 2–5, subsessile; scales of the subglobose very woolly involucre lanceolate, erect, tipped with somewhat spreading prickles; the innermost unarmed; flowers apparently purple.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 418. Carduus discolor (in part), *Hook.! fl. Bor.-Am.* 1. *p.* 302.

Saskatchawan or Rocky Mountains? (*Richardson* or *Drummond.*)—Plant 12–16 inches high, slender: doubtless distinct from C. discolor; but the specimens are not very complete. The stronger bristles of the pappus are somewhat more evidently clavellate or thickened at the apex than in most other species.

5. *C. discolor* (Spreng.): stem striate, hirsute, with leafy somewhat spreading branches; leaves all deeply pinnatifid, sessile, sparsely hairy and green above, densely tomentose-canescent (bluish-white) beneath; the segments divaricate, mostly 2–3-lobed, lanceolate or linear-lanceolate, spinulose-ciliate, and tipped with an acicular prickle; scales of the globose involucre somewhat arachnoid, appressed; the exterior ovate and tipped with a very slender spreading acicular prickle; the innermost linear-lanceolate; flowers reddish-purple.—*Spreng. syst.* 3. *p.* 373; *DC. prodr.* 6. *p.* 640. Cnicus discolor, *Muhl.! in Willd. spec.* 3. *p.* 1670; *Ell. sk.* 2. *p.* 271; *Bigel. fl. Bost. ed.* 2. *p.* 292. Carduus discolor, *Nutt. gen.* 2. *p.* 130; *Darlingt.! fl. Cest. p.* 437. Serratula discolor, *Poir.*

Fields and along thickets, (Canada?) Northern and New England States! to Illinois! Kentucky! and the upper districts of S. Carolina. July–Sept. —② Stem 3–6 feet high; the rather slender branches leafy to the summit, and terminated by heads an inch or more in diameter. Leaves of the branchlets quite small; the lower cauline 6–12 inches long (the white persistent tomentum very closely appressed); the segments mostly long and narrow, often falcate.

6. *C. altissimum* (Spreng.): stem tall, pubescent or somewhat woolly, branching; the branches leafy to the summit; leaves roughish-pubescent above, densely tomentose-canescent beneath, spinulose-ciliate; the radical petioled, pinnatifid; the cauline sessile, oblong-lanceolate, either undivided, sinuate-toothed, or sinuate-pinnatifid; the lobes or teeth spinescent; heads (rather large) bracteate; scales of the globose-ovoid involucre arachnoid when young, appressed; the exterior ovate-lanceolate, tipped with a spreading acicular prickle; the innermost narrow, with scarious acuminate tips; flowers mostly purple.—*DC.! prodr.* 6. *p.* 640, *& not.* 8. *pl. rar. Genev. p.* 5. C. altissimum, laciniato folio, &c., *Dill. Elth.* 1. *p.* 81, *t.* 69. C. diversifolium, *DC.! prodr. l. c. p.* 649. Carduus altissimus, *Linn. spec.* 2. *p.* 824; *Nutt. gen.* 2. *p.* 129; *Darlingt. fl. Cest. p.* 439. Cnicus altissimus, *Willd. spec.* 3. *p.* 1671; *Ell. sk.* 2. *p.* 268.

Fields and thickets, Pennsylvania! and Ohio! to Western Missouri! Louisiana! Alabama! Carolina! &c. Aug.–Sept.—♃? Stem 3–10 feet high. Leaves quite variable in outline; sometimes the radical undivided: when the cauline are pinnatifid, the lobes are usually few and short, oblong or triangular. Scales of the involucre with a livid line or spot near the apex, which is often somewhat glutinous. Heads about an inch in diameter.

7. *C. Virginianum* (Michx.): stem slender, simple or loosely branched above, arachnoid; the branches or peduncles nearly naked; leaves sessile,

lanceolate or linear-lanceolate, green and glabrous above (or sparingly pubescent when young), tomentose-canescent beneath, with spinulose-ciliate (at length revolute) margins, either entire, repandly spinulose-toothed, or sparingly sinuate-lobed; the radical petioled, often sinuate-pinnatifid; heads small, not bracteate; scales of the subglobose involucre somewhat arachnoid when young, with a glutinous keel near the apex, appressed; the exterior ovate and lanceolate, tipped with a short cuspidate spreading prickle; the innermost attenuate, unarmed; flowers purple.—*Michx.! fl.* 2. *p.* 90; *DC. prodr.* 6. *p.* 653. Carduus Virginianus, *Linn.*; *Jacq. obs.* 4. *t.* 99; *Nutt.! l. c.* Cnicus Virginianus, *Pursh, fl.* 2. *p.* 506; *Ell. sk.* 2. *p.* 270.

β. lower cauline and radical leaves all deeply sinuate-pinnatifid, with the segments often 2–3-lobed; the upper very small, linear, entire.

γ. stem more leafy, much branched and paniculate above; leaves mostly pinnatifid and more spinescent.—Cnicus arvensis, *Hook.! in compan. to bot. mag.* 1. *p.* 48.

δ.? stem stouter, sparingly branched, leafy; leaves all deeply pinnatifid, with the lobes spinescent; heads larger (roots often tuberiferous).—C. filipendulum, *Engelm.! mss.*

Pine woods, &c., Virginia to Georgia! Alabama! and Kentucky! *β.* & *γ.* Louisiana! Ohio! &c. *δ.* Texas, *Drummond! Dr. Lindheimer!* April–Sept.—♃ or ②?—Stem 2–3 feet high. Heads about half an inch in diameter, smaller than in any of our species except C. arvense. In var. *δ.*? which is not unlikely either a distinct species or a variety of C. altissimum, the heads are nearly as large as in the latter.

* * *Scales of the involucre appressed, regularly imbricated in several unequal series, unarmed, mucronate, or the exterior cuspidate with a short erect prickle: heads naked, or merely bracteate at the base.*

8. *C. muticum* (Michx.): stem tall, striate-angled, somewhat glabrous, paniculate at the summit; the branches sparingly leafy, bearing 1–few heads; leaves sessile, sparsely hairy above, arachnoid-tomentose beneath, when old often nearly glabrous, deeply pinnatifid; the segments lanceolate, sparingly lobed or incised, acute, pointed with spines, the margins ciliate-spinulose; scales of the subglobose involucre villous-arachnoid and somewhat viscid, appressed, unarmed; the exterior ovate or ovate-lanceolate, often mucronate; the innermost elongated, linear-lanceolate, acute; flowers purple. —*Michx.! fl.* 2. *p.* 89; *DC.! prodr.* 6. *p.* 652. C. Bigelowii, *DC. l. c.* Carduus muticus, *Nutt.*; *Hook. fl. Bor.-Am.* 1. *p.* 302; *Darlingt.! fl. Cest. p.* 438. Cnicus muticus, *Pursh, l. c.*; *Ell. sk.* 2. *p.* 268. C. glutinosus, *Bigel.! fl. Bost. ed.* 2. *p.* 291, not of *Lam.*

β. leaves often glabrous or nearly so, more rigid and spinescent; the segments linear-lanceolate.—Carduus glaber, *Nutt. gen.* 2. *p.* 129. Cnicus glaber, *Ell. sk.* 2. *p.* 270? Cirsium Nuttallii, *DC. prodr.* 6. *p.* 651?

Low shaded grounds and swamps, Canada! and Saskatchawan! to Louisiana! and Texas! the var. *β.* (which is not very distinct) growing in more exposed places, and prevailing in the Southern and Southwestern States! Aug.–Sept.—♃ or ②? Stem 3–8 feet high. Margins of the leaves strongly ciliate-spinulose when the plant grows in exposed places; the ciliate prickles weak and bristly when in deep shade. Heads half an inch to an inch in diameter; the dense cobwebby hairs which clothe the involucre partly disappearing with age. Marginal flowers sometimes with the stamens sterile, and the pappus sparingly or not at all plumose.

9. *C. Lecontei*: stem simple, slender, angled, naked at the summit and terminated by a single (rather large) head; leaves linear-lanceolate, acute, spinulose-ciliolate, sparingly toothed, the teeth spinose, glabrous above,

clothed beneath like the stem with a white and floccose somewhat deciduous wool, more or less decurrent; the lowest narrowed at the base into a kind of petiole; scales of the ovoid involucre appressed, somewhat arachnoid when young, glandular-carinate towards the apex; the exterior ovate and lanceolate, cuspidate-mucronate; the innermost elongated, linear-lanceolate, subulate-acuminate.—Cnicus Virginianus, *Hook.! in compan. to bot. mag.* 1. *p.* 48, not of authors.

Pine woods? Georgia, *Le Conte!* Covington, Louisiana, *Drummond!*—♃? Stem about 2 feet high, perfectly simple. Lower leaves 6–8 inches long, half an inch wide, irregularly beset with spinose teeth; the margin not revolute. Heads much larger than in C. Virginianum, and nearly or quite equal to C. muticum: exterior scales of the involucre very short, the inner an inch or more in length, very slender; the short points straight. Flowers ochroleucous?

10. *C. repandum* (Michx.): arachnoid-woolly when young; stem low, simple, very leafy to the summit, bearing one or two heads; leaves crowded, oblong-linear, clasping, the margins undulate or repand-sinuate, thickly beset with small prickles; exterior scales of the involucre ovate-lanceolate and somewhat awned; the inner elongated and attenuate-acuminate; flowers purple.—*Michx.! fl.* 2. *p.* 89; *DC. prodr.* 6. *p.* 651. Carduus repandus, *Pers. syn.* 2. *p.* 386. C. Virginianus, *Walt. Car. p.* 195? Cnicus repandus, *Ell. sk.* 2. *p.* 269.

Dry pine barrens, &c., North Carolina! to Georgia! June–July.—♃? Stem 1–2 feet high. Leaves 2–4 inches long, scarcely half an inch wide; the lowest tapering at the base. Heads middle-sized. Filaments slightly hairy towards the base.

11. *C. Drummondii:* dwarf, subcaulescent, sparsely hairy; stem (2–5 inches high) shorter than the leaves, bearing 1–3 large heads; leaves lanceolate, pinnatifid, green on both sides, ciliate-spinulose, the somewhat incised lobes spinose; scales of the subglobose naked involucre ovate and ovate-lanceolate, acuminate, appressed; the exterior mucronate or slightly spinose, the innermost with scarious and erose somewhat dilated tips; pappus of the marginal flowers slightly plumose near the base, or only denticulate! (flowers red).—Carduus pumilus, *Hook.! fl. Bor.-Am.* 1. *p.* 302, excl. syn.

Banks of the Saskatchawan and prairies of the Rocky Mountains, *Drummond!*—Heads rather smaller than those of C. pumilum; the scales of the involucre broader, smoother, and almost unarmed. Leaves chiefly radical, sparsely pubescent on both sides.

12. *C. pumilum* (Spreng.): stem low, stout, striate, hairy or villous, bearing 1–3 very large heads; leaves lanceolate-oblong, partly clasping, green on both sides, more or less villous, especially on the midrib beneath, pinnatifid, with spinulose margins; the segments short, incised or lobed, very spinose; involucre ovoid-globose, 1–5-bracteate; the exterior scales ovate-lanceolate, appressed, acuminate and tipped with a short spine; the innermost lanceolate-linear, with acuminate scarious tips; flowers reddish-purple.—*DC. prodr.* 6. *p.* 651. Carduus odoratus, *Muhl. cat. p.* 70; *Darlingt.! fl. Cest. ed.* 1. *p.* 85. C. pumilus (& var. Hystrix), *Nutt.! gen.* 2. *p.* 130; *Darlingt.! fl. Cest. ed.* 2. *p.* 437. Cnicus pumilus, *Torr.! compend. p.* 282; *Bigel. fl. Bost. ed.* 2. *p.* 292.

Dry fields and borders of swamps, Massachusetts to New York near the coast! New Jersey! and Pennsylvania! July.—② Stem 1–2 (rarely 3–4) feet high. Heads usually larger than in any other N. American species, often somewhat involucrate with a few spinose bracts. Involucre somewhat arachnoid. Corolla about 2 inches long. Flowers fragrant, sometimes pure white (*Mr. Oakes*).—Muhlenberg's name is the most appropriate, and should have been preserved.—*Pasture Thistle.*

* * * *Scales of the involucre rather loosely imbricated in few series, tapering to a subulate point: heads conspicuously involucrate with a whorl of very spinose bracts!*

13. *C. horridulum* (Michx.): arachnoid-woolly when young, at length somewhat glabrous; stem simple or sparingly branched; leaves partly clasping, lanceolate, pinnatifid, the short lobes toothed or incised, strongly spinose; heads (large) surrounded by a whorl or dense cluster of pectinate-spinose bracts about the length of the involucre, the prickles often fascicled; scales of the subglobose involucre linear-lanceolate minutely scabrous and ciliate, tapering to a very sharp point, unarmed; flowers pale yellow.—*Michx.! fl.* 2. *p.* 90; *DC.! prodr.* 6. *p.* 651. C. megacanthum, *Nutt.! in trans. Amer. phil. soc. l. c.* Carduus horridulus, *Pers. syn.* 2. *p.* 390. C. spinosissimus, *Walt.* Cnicus horridulus, *Pursh, fl.* 2. *p.* 507; *Bigel.! fl. Bost. ed.* 2. *p.* 291; *Hook.! compan. to bot. mag.* 1. *p.* 48. C. spinosissimus, *Darlingt.! fl. Cest. p.* 438.—Varies, with the anthers and styles reddish or purple (*Bigel. l. c. Oakes, mss.*), or with the corolla sometimes changing to purple in drying (*Barratt, mss.*), or

β. *Elliottii:* flowers purple.—Cnicus horridulus, *Ell. sk.* 2. *p.* 272.

Hills and poor soils, from the coast of Massachusetts! and Connecticut! to Florida! and Louisiana! β. Southern States, *Elliott.* Florida, *Dr. Chapman!* (Corolla in dried specimen light purple, the anthers yellowish.) Lincoln County, N. Carolina, *Mr. Curtis! Dr. Hunter!* (Corolla, anthers, and style deeply purple.) June–Aug. in the Northern, March–May in the Southern States.—♃ or ②? Plant 1–3 feet high; the large heads subtended by 12–30 very spinose bracts; the exterior often pinnatifid.—A somewhat variable, but well-marked species, with the corolla and pappus much larger than in C. spinosissimum, the heads not clustered, and the lobes of the leaves rather distant. From the characters given, we suspect it is equally distinct from C. glabrum, *DC.*, of which we possess no specimen.—*Yellow Thistle.*

* * * * *Scales of the involucre loosely imbricated in few series, somewhat unequal in length; the exterior with subulate-spinescent tips: heads not involucrate with bracts.*

14. *C. remotifolium* (DC. l. c.): stem tall, erect, striate, branching and nearly naked above, somewhat arachnoid and hairy; leaves remote, lanceolate, sparsely hairy above, arachnoid-tomentose beneath, partly clasping by an auriculate very spinose base, pinnately parted; the segments deeply 2–3-cleft; the lobes lanceolate, tipped with a spine, the margins somewhat spinulose; heads large, paniculate; the panicle nearly leafless; scales of the involucre somewhat arachnoid, nearly equal, straight, lanceolate-subulate, loose, cuspidate; the innermost membranaceous, much acuminated, unarmed; "flowers purplish."—Carduus remotifolius, *Hook. fl. Bor.-Am.* 1. *p.* 302. Cirsium stenolepidum, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 419.

Plains of Oregon, *Douglas, Nuttall!*—Stem purple above, 3–5 feet high. Leaves somewhat resembling those of C. discolor. Heads as large as in C. lanceolatum.

§ 3. *Heads by abortion diœcious: exterior scales of the involucre appressed, unarmed, or the outermost tipped with a short prickle or bristle; the innermost with scarious tips: filaments nearly glabrous: roots creeping.* (Cephalonoploe, *DC.*)

15. *C. arvense* (Scop.): rhizoma creeping; stem striate-angled, panicu-

late; the branches somewhat woolly: leaves oblong or lanceolate, sessile, glabrous, sometimes a little woolly beneath, sinuate-pinnatifid, undulate, spinose; heads small and numerous; scales of the involucre ovate-lanceolate, mucronate, a few of the exterior cuspidate-spinose; flowers pale purple, or rarely whitish.—*DC.! prodr.* 6. *p.* 643. Serratula arvensis, *Linn.; Fl. Dan. t.* 644. Carduus arvensis, *Smith, Engl. bot. t.* 975; *Hook.! fl. Bor.-Am.* 1. *p.* 301; *Darlingt.! fl. Cest. p.* 439. Cnicus arvensis, *Pursh, fl.* 2. *p.* 506; *Bigel. fl. Bost. ed.* 2. *p.* 291. Breea arvensis, *Less. syn. p.* 9.

Cultivated fields of the Northern and Middle States! introduced with grain from Europe, and in many places becoming an extremely troublesome weed. Also Canada! to Saskatchawan and Newfoundland; probably indigenous. July–Aug.— ♃ Too well known to our farmers, under the name of *Canada Thistle*, or *Cursed Thistle*.

‡ *Little-known species.*

16. *C. foliosum* (DC. l. c.): stem erect (simple?), robust, striate, somewhat woolly; leaves erect, the upper very numerous and exceeding the heads, flaccid, irregularly sinuate-toothed, unequally ciliate with rather rigid spines, sparingly hairy above, pale and arachnoid-tomentose beneath; heads large, glomerate in the axils of the uppermost leaves; scales of the involucre linear, appressed; pappus very copious. *Hook.*—Carduus foliosus, *Hook. fl. Bor.-Am.* 1. *p.* 303.

Prairies of the [Northern] Rocky Mountains, *Drummond.*—"The stems are singularly erect and straight; the leaves also erect, 6–8 inches long, the uppermost very numerous, considerably exceeding and almost concealing the flowers." *Hook.*

17. *C. edule* (Nutt.): annual or biennial, nearly smooth; leaves lanceolate, clasping, moderately pinnatifid; the segments obtuse, almost equally 2-lobed, spinescent and spinulose-ciliate; heads terminal, glomerate, sessile, 3–5 together; involucre subglobose, arachnoid-tomentose; the scales linear-lanceolate, tipped with short erect spines. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 420.

Common in the plains of the Oregon and the Blue Mountains, *Nuttall.*—A robust plant 3–4 feet high, somewhat succulent, with purple flowers, nearly as large as in C. lanceolatum. Filaments hairy. The young stems are eaten raw by the aborigines. *Nutt.*—Probably the same as the C. foliosum, *Hook.* An edible thistle is mentioned by Lewis and Clarke.

18. *C. brevifolium* (Nutt.): stem slender, nearly terete, and as well as the lower surface of the leaves canescently tomentose, bearing 2–3 heads; leaves oblong-lanceolate, clasping, green and nearly glabrous above, sinuate-pinnatifid, with shallow simple or 2-cleft lobes, tipped with spines, and with spinose serratures; involucre ovate, naked; the scales lanceolate, glutinous, smooth, terminating in small erect spines; flowers ochroleucous. *Nutt. in trans. Amer. phil. soc. l. c. p.* 421.

Plains of the Rocky Mountains, *Nuttall.*—Leaves about half an inch wide, 2–3 inches long. Allied to C. Virginianum. *Nutt.*

19. *C. canescens* (Nutt.): perennial, dwarf, slender, canescently tomentose; leaves lanceolate, decurrent, pinnatifid; the undulate segments oblong, 2-cleft, spinescent, and with spiny serratures; heads few (3–5), conglomerate, sessile; involucre slightly pubescent; the scales lanceolate, with rigid erect spines. *Nutt. in trans. Amer. phil. soc. l. c. p.* 420.

Arid deserts of the Platte, *Nuttall.*—Root creeping as in C. arvense. Stem 6–10 inches high. Leaves 3–4 inches long, about an inch wide, nearly white on both sides, but most so beneath, decurrent with narrow spiny margins. Flowers pale rose-color. *Nutt.*—Not improbably our C. undulatum, var. β.

172. CARDUUS. *Tourn.; Linn.* (excl. spec.); *Gærtn. fr. t.* 162; *DC. l. c.*

Bristles of the pappus scabrous (not plumose): otherwise as in Cirsium.

§ *Bristles of the pappus few and slender*—LEPTOCHÆTA, *Nutt.*

1. *C. occidentalis* (Nutt.): perennial, dwarf; leaves deeply pinnatifid, nearly smooth above, canescently tomentose beneath; the segments somewhat palmate; the ultimate lobes lanceolate, tipped with short spines, spinulose-serrulate; scales of the subglobose arachnoid-tomentose involucre lanceolate, erect, terminating in straight spines; the innermost scarious, spineless, acuminate. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 418.

St. Barbara, California, *Nuttall.*—Stem tomentose, 6–12 inches high. Leaves 4–5 inches long, about an inch wide, with a lanceolate outline; the cauline clasping. Heads 2–3, subsessile, pale purple. Plant with the habit of Cirsium discolor, *Nutt.*—We have not seen this plant, the only one of the genus known to inhabit this continent. May it not be some species of Southern Europe, introduced into California?

C. pectinatus (Linn. mant.), a plant of uncertain origin, said to have been raised from seeds received from Pennsylvania, is doubtless not a native of this country, and is probably correctly referred by Sprengel to Carduus defloratus.

173. ONOPORDON. *Vaill.; Linn.; Gærtn. fr. t.* 161; *Schkuhr, handb. t.* 230.

Heads many-flowered; the flowers perfect. Scales of the ovate-globose involucre imbricated, coriaceous, tipped with a lanceolate spinescent appendage. Receptacle fleshy, deeply alveolate; the alveoli membranaceous, sinuate-toothed. Tube of the corolla incrassated at the summit. Anthers with a linear-subulate appendage, and with short tails: filaments nearly glabrous. Branches of the style concreted nearly to the apex. Achenia obovoid-compressed, 4-angled, rugose transversely. Bristles of the pappus numerous, filiform, barbellulate, united at the base into a corneous ring.—Coarse branching herbs; the stems winged by the decurrent base of the lobed or toothed leaves; the lobes and teeth spinescent. Corolla purple, rarely varying to white.

1. *O. acanthium* (Linn.): stem erect, branching, somewhat woolly; leaves decurrent, sinuate, spinose-toothed, tomentose on both sides; scales of the involucre linear-subulate; the exterior spreading, woolly at the base. *DC.* —*Engl. bot. t.* 977; *Bigel. fl. Bost. ed.* 2. *p.* 293; *DC. prodr.* 6. *p.* 618.

Waste grounds and dry pastures; introduced from Europe, and naturalized in the New England States! July–Aug.— ② A tall cottony plant, called *Cotton Thistle.*

174. LAPPA. *Tourn. inst. t.* 156; *Juss.; Lam. ill. t.* 665; *DC.*

Heads many-flowered; the flowers all perfect and similar. Involucre globose; the imbricated scales coriaceous and appressed at the base, then subulate and spreading, with the rigid apex uncinate. Receptacle flat, somewhat fleshy, setose-fimbrillate. Corolla regularly 5-cleft, 10-nerved. Anthers tipped with filiform appendages, caudate at the base: filaments papillose. Branches of the style free and divergent at the apex. Achenia oblong, compressed, glabrous, rugose transversely. Pappus of numerous short filiform scabrous bristles, not united into a ring, caducous.—Biennial branching coarse (European) herbs; with large cordate and petioled leaves with slightly undulate margins, the lower surface more or less tomentose. Heads small, solitary or somewhat corymbose. Corolla purple varying to white, equalling the involucre.—*Burdock.*

1. *L. major* (Gærtn.): scales of the involucre all subulate and with uncinate tips, either glabrous or loosely arachnoid; upper cauline leaves ovate; the others (large) cordate.—*Gærtn. fr.* 2. *p.* 379, *t.* 162. L. major & L. minor, *DC. prodr.* 6. *p.* 661. Arctium Lappa, *Linn.; Darlingt. fl. Cest. p.* 436.

Fence-rows and waste-places in rich soil: introduced from Europe.—A troublesome weed, well known under the name of *Burdock.* Dr. Darlington and Mr. Tuckerman have observed an occasional form, (L. Bardana?) with pinnatifid leaves.

SUBORDER II. LABIATIFLORÆ. *DC.*

Corolla of the perfect flowers bilabiate; the outer lip mostly 3-lobed or 3-toothed, and the inner 2-cleft or 2-toothed. Pollen smooth, globose or elliptical.

TRIBE VI. MUTISIACEÆ. *Less.*

Heads heterogamous, or rarely diœcious; the marginal flowers pistillate or neutral, either ligulate or bilabiate.—Style nearly as in the Cynareæ.

175. CHAPTALIA. *Vent. hort. Cels. t.* 61; *DC. in ann. mus.* 16. *p.* 66.

Heads many-flowered, heterogamous, radiate; the rays pistillate and fertile, in 2 series; the disk-flowers perfect, but sterile by the abortion of the ovary. Corolla of the outer series of ray-flowers simply ligulate, or rarely with a minute inner lip; of the inner series filiform and much shorter than the style, obliquely truncate, the inner lip rudimentary; of the disk-flowers bilabiate, the lips equal in length, the outer 3-toothed, the inner 2-parted. Scales of the campanulate involucre imbricated in few series, linear, acute, 1-nerved. Receptacle naked. Anthers caudate. Achenia of the fertile flowers oblong, glabrous, striate, attenuate at each end, somewhat beaked, and with the apex slightly dilated; of the disk-flowers abortive. Pappus copious, capillary, minutely scabrous.—Perennial acaulescent (American) herbs, with naked scapes bearing solitary heads; the leaves all radical, tomentose beneath. Flowers white or purplish.

1. *C. tomentosa* (Vent. l. c.): leaves oblong or nearly lanceolate, somewhat petioled, retrorsely denticulate; the lower surface and the slender scape densely tomentose with a white matted wool; the upper arachnoid when young, at length glabrous; head nodding when in flower; exterior rays 16–20, simply ligulate.—*Pursh! fl.* 2. *p.* 577; *Bot. mag. t.* 2257; *Ell. sk.* 2. *p.* 459; *DC.! prodr.* 7. *p.* 41. Perdicium semifloscularc, *Walt.! Car. p.* 204. Tussilago integrifolia, *Willd.! spec.* 3. *p.* 1964; *Michx.! fl.* 2. *p.* 121.

Damp pine barrens, &c. North Carolina! to Florida! and Louisiana! March–May. Scape a span to a foot high.

TRIBE VII. NASSAUVIACEÆ. *Less.*

Heads homogamous, radiatiform; the flowers all similar and perfect. Style nearly as in the Senecioneæ.

176. ACOURTIA. *Don, in trans. Linn. soc.* 16. *p.* 203; *DC. prodr. p.* 65.

Heads 10–30-flowered, discoid, homogamous; the flowers perfect. Involucre turbinate; the scales imbricated in several series, lanceolate, appressed, dilated at the base, articulated with the rachis, deciduous! Receptacle naked. Corolla of all the flowers bilabiate; the outer lip ligulate and 3-toothed; the inner 2-parted, with the revolute lobes linear and obtuse. Anthers tipped with a linear-lanceolate cartilaginous appendage; the tails simple and obtuse. Branches of the style truncate, papillose at the apex. Achenia nearly terete, elongated, papillose-scabrous. Pappus a single series of bristles, penicillate at the apex, deciduous.—Shrubby (Mexican and Californian) branching glaucous plants, with the habit of Serratula. Leaves cordate-clasping, with the auricles free, spinulose-serrate. Heads 3–10, fasciculate-corymbose: scales of the involucre often reddish, ciliate. Corolla purple or rose-color; pappus white. *DC.*

1. *A. microcephala* (DC.): stem herbaceous? branching; the branches angular, somewhat velvety with a glandular pubescence; leaves cordate-clasping, ovate, acute, sharply toothed, glandular, somewhat puberulent beneath; heads several in a thyrsoid corymb; scales of the involucre mucronate-acuminate, glandular-puberulent on the back. *DC. l. c.*

California, *Douglas.*—This and the Chaptalia are the only North American representatives of a suborder, which is eminently characteristic of the western portion of South America.

SUBORDER III. LIGULIFLORÆ. *DC.*

Flowers all ligulate and perfect, disposed in a homogamous radiatiform head. Pollen scabrous and many-sided, usually dodecahedral.

TRIBE VIII. CICHORACEÆ. *Vaill.*, *Juss.*

Style cylindraceous above, the summit as well as the rather obtuse branches uniformly pubescent; the stigmatic lines terminating below or near the middle of the branches.—Plants with a milky juice! Leaves alternate.

CONSPECTUS OF THE GENERA.

Subtribe 1. LAMPSANEÆ.—Pappus none. Receptacle not chaffy.

177. LAMPSANA. Achenia obscurely striate. Involucre erect. Heads paniculate.
178. APOGON. Achenia many-ribbed. Involucre connivent in fruit. Heads solitary or umbellate. Cauline leaves often opposite.

Subtribe 2. HYOSERIDEÆ.—Pappus either wholly or partly chaffy or squamellate. Receptacle not chaffy.

* *Involucre simple, equal, scarcely in 2 series.*

179. KRIGIA. Pappus of 5 broad chaffy scales and 5 alternate bristles.
180. CYNTHIA. Pappus of numerous short squamellæ and capillary bristles.

* * *Involucre double or imbricated.*

181. SCORZONELLA. Pappus of 10 short chaffy scales, bearing long capillary awns.
182. CALAIS. Pappus of 5 elongated and scarious (often bifid) awned scales.
183. CICHORIUM. Pappus very small, multi-squamellate. Flowers blue!

Subtribe 3. SCORZONEREÆ.—Pappus setose, or plumose. Receptacle not chaffy.

184. STEPHANOMERIA. Achenia truncate. Pappus plumose. Heads 3–6-flowered.
185. RAFINESQUIA. Achenia rostrate. Pappus plumose. Heads many-flowered.
186. LEONTODON. Achenia fusiform or slightly rostrate. Pappus plumose. Heads many-flowered.

Subtribe 4. LACTUCEÆ.—Pappus capillary, not plumose. Receptacle not chaffy.

* *Pappus dirty white or tawny, fragile. Achenia not rostrate.*

187. APARGIDIUM. Pappus barbellate, in a single series. Heads many-flowered.
188. HIERACIUM. Pappus scabrous, in a single series. Heads 20–many-flowered (yellow). Achenia oblong or columnar.
189. NABALUS. Pappus scabrous, copious. Heads 5–30-flowered (ochroleucous, whitish, or purplish), nodding. Achenia linear-oblong, cylindrical.
190. LYGODESMIA. Pappus scarcely scabrous, very copious. Heads 5–10-flowered (rose-purple), erect. Achenia linear, elongated.

* * *Pappus bright white (except in* Pyrrhopappus *and a single* Mulgedium*).*

+ Achenia terete or angled, not evidently compressed nor rostrate.

191. MALACOTHRIX. Pappus in a single series, soft; the bristles sparingly barbellate near the base. Achenia short, truncate.

192. Crepis. Pappus in two or more series, soft, slightly scabrous. Achenia columnar, fusiform, or obscurely pointed.

193. Troximon. Pappus copious and unequal, in several series, rigid. Achenia oblong-linear, scarcely or not at all rostrate. Acaulescent, simple.

+ + Achenia terete, ribbed or angled, with a long filiform beak.

194. Macrorhynchus. Involucre imbricated. Achenia with about 10 ribs or callous wings, smooth. Acaulescent.

195. Taraxacum. Involucre double, in 2 series. Achenia striate-angled, usually muricate. Acaulescent.

196. Pyrrhopappus. Involucre double, in 2 series, the exterior of spreading subulate scales. Achenia scabrous. Caulescent or acaulescent. Pappus reddish or fulvous.

+ + + Achenia flattened, either compressed or obcompressed.

197. Lactuca. Achenia obcompressed, flat, abruptly produced into a filiform beak. Pappus very soft and white.

198. Mulgedium. Achenia compressed, tapering into a short or thick (sometimes indistinct) beak. Pappus bright white or tawny. Flowers blue.

199. Sonchus. Achenia compressed, not rostrate. Pappus exceedingly soft and delicate, bright white. Involucre becoming tumid at the base. Flowers yellow.

Subtribe 1. Lampsaneæ, *Less.*—Receptacle not chaffy. Pappus none.

177. LAMPSANA. *Tourn.; Juss. gen. p.* 168; *DC. prodr.* 7. *p.* 76.

Lapsana, *Linn.*; *Gærtn. fr. t.* 157.

Heads 8–12-flowered. Scales of the cylindrical-campanulate angled involucre 8, erect, in a single series, bracteolate with one or two minute scales. Receptacle narrow, naked. Achenia oblong, glabrous, obscurely striate, caducous, destitute of pappus.—Slender branching herbs (natives of the old world), with angulate or toothed leaves, and small loosely paniculate-corymbose heads. Flowers yellow.

1. *L. communis* (Linn.): annual, somewhat glabrous; lower leaves ovate, angulate-toothed, petioled, sometimes lyrate; involucre very glabrous, nearly equalling the flowers.—*Fl. Dan. t.* 500; *Engl. bot. t.* 844; *Schkuhr, handb. t.* 225; *Hook.! fl. Bor.-Am.* 1. *p.* 296.

Lower Canada, *Mrs. Sheppard! Mrs. Percival!* Probably introduced from Europe.—Mr. Oakes once found this plant by the roadside in Cambridge, Massachusetts.

178. APOGON. *Ell. sk.* 2. *p.* 267; *DC. prodr.* 7. *p.* 78.

Heads 10–20-flowered. Scales of the involucre mostly 8, somewhat in two series, ovate, acuminate, nearly as long as the corolla, connivent in fruit. Receptacle naked. Achenia obovoid-oblong, terete, longitudinally ribbed, and marked with very minute transverse striatures, glabrous. Pappus none!

(or sometimes very minute and chaffy. *DC.*)—An annual glabrous or somewhat glaucous small herb, 4–12 inches high, branched from the base; the branches slender, erect or ascending, bearing 1–3 or several umbellate slender pedicels at the summit, and also frequently in the axils of the cauline leaves, mostly a little hispid near the summit, terminated by single small heads. Radical leaves obovate-oblong or lanceolate, entire or sparingly toothed, the primordial nearly sessile, the others tapering into petioles; cauline lanceolate, acute or acuminate, entire, sessile, partly clasping; the uppermost mostly opposite! Flowers yellow.

A. humilis (Ell.! l. c.)—A. humilis & A. gracilis, *DC.! l. c.*

β. lyrata: radical and lower cauline leaves (either some or all of them) variously lyrate-toothed or pinnatifid.—A. lyratum, *Nutt.! in jour. acad. Philad.* 7. *p.* 71, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 424. Serinia cæspitosa, *Raf. fl. Ludov. p.* 149? (*DC. prodr.* 7. *p.* 261.)

South Carolina! Georgia! and Florida! to Louisiana! Arkansas! and Texas! *β.* Louisiana, *Drummond! Dr. Hale!* Plains of Arkansas, *Nuttall, Dr. Pitcher!* &c. Texas, *Drummond!* April–June.—We cannot discover the 'minute chaffy pappus' in an original specimen of A. gracilis, *DC.*, nor find any appreciable difference in the achenia. In both Elliott's and Nuttall's plants, also, the pedicels are frequently furnished with bristly hairs towards the summit; and the irregular incision of the leaves in the latter is very inconstant.

Subtribe 2. HYOSERIDEÆ, *Less.*—Receptacle not chaffy. Pappus simple or double, either wholly or partly chaffy, squamellate, or coroniform.

179. KRIGIA. *Schreb. gen. p.* 532; *Willd.*; *DC. prodr.* 7. *p.* 88.

Heads 15–30-flowered. Scales of the involucre 6–15, somewhat in a double series, equal. Receptacle naked. Achenia turbinate, many-striate, somewhat 5-angular. Pappus double; the exterior of 5 broad and rounded scarious chaffy scales; the inner (rarely wanting) of as many slender scabrous bristles alternating with the scales, and corresponding with the angles of the achenium.—Small annual (North American) herbs, branching from the base; the mostly lyrate or toothed leaves radical or nearly so; the naked branches or scapes long and slender, simple, terminated by solitary small heads. Flowers yellow.

§ 1. *Bristles of the pappus more or less exceeding the chaffy scales, but not longer than the terete achenium, sometimes entirely wanting: scales of the involucre* 5–8, *with a strong midrib, erect and carinate-navicular in fruit.*—CYMBIA.

1. *K. occidentalis* (Nutt.): scapes very numerous from the same root, diffuse, simple, leafless, hispid; leaves either entire or lyrate; the exterior with the lamina or terminal lobe oval or roundish; the innermost lanceolate or narrowly linear; achenia equally many-ribbed, ciliolate-scabrous on the ribs which correspond with the bristles of the inner pappus, very minutely

reticulate-rugose by transverse lines.—*Nutt.! in jour. acad. Philad.* 7. *p.* 104, *& in trans. Amer. phil. soc. l. c. p.* 427.

β. mutica: bristles of inner pappus altogether wanting!

Arkansas, *Nuttall! Dr. Leavenworth!* Texas, *Drummond!* (*α.* & *β.* under no. 164.)—Scarcely a span high. Earlier radical leaves in shape not unlike those of Cardamine bellidifolia, sometimes lyrate-pinnatifid with several divisions; the later ones much more slender. One of two of the involucral scales are usually 2–3-nerved, and 2–3-carinate in fruit.—Except as to the pappus, the var. *β.* is not distinguishable from the ordinary form.

§ 2. *Bristles of the pappus much longer than the pentangular achenium: scales of the involucre* 10–18, *linear-lanceolate, nearly nerveless, spreading in fruit.*—Eukrigia.

2. *K. Virginica* (Willd.): scapes at length several, sparsely and minutely pubescent, especially near the apex; leaves somewhat glaucous; the primary orbicular or spatulate, mostly entire; the succeeding spatulate-oblong or lanceolate, lyrate-toothed, or sinuate-pinnatifid.—*Willd. spec.* 3. *p.* 1618; *Nutt.! gen.* 2. *p.* 127; *Ell. sk.* 2. *p.* 264; *Bigel. fl. Bost. ed.* 2. *p.* 289; *Darlingt.! fl. Cest. p.* 440; *DC.! l. c.* Hyoseris Virginica, *Linn. spec.* 2. *p.* 809; *Lam. jour. hist. nat.* 1. *p.* 22, *t.* 12; *Michx.! fl.* 2. *p.* 88. Cynthia Virginica, *Beck, bot. p.* 169, not of *Don.*

β. dichotoma (Barton): more caulescent; stems much branched near the base.—K. dichotoma, *Nutt.! l. c.; DC.! l. c.* Hyoseris ramosissima, *Bart. prodr. fl. Philad.*

Dry sandy grounds and rocks (rarely in wet places), Canada! to Louisiana! and Texas! May–Aug.—Scapes 1–10 inches high. Flowers deep yellow. Achenia minutely hispid-scabrous on the angles.—The var. *β.* is a summer state of the species.—*Dwarf Dandelion.*

3. *K. Caroliniana* (Nutt.): scapes solitary or several, slightly and sparsely pubescent, often somewhat hispid at the summit; primary leaves linear-lanceolate, acute at each end, entire or with one or two divaricate lobes on each side; the succeeding variously pinnatifid, runcinate, or incised, acute or obtuse.—*Nutt.! l. c.; Ell. l. c.; DC.! l. c.* Hyoseris Caroliniana, *Walt. Car. p.* 194.

β. leptophylla: leaves all linear-lanceolate, acuminate, either entire or with one or two slender divaricate lobes on each side.—K. leptophylla, *DC.! l. c.*

Carolina! to Florida, Alabama! and Texas! Feb.–May.—Scapes 1–12 inches high. Leaves very variable as to size, incision, &c.

‡ *Uncertain species.*

4. *K. montana* (Nutt. l. c.): very glabrous, procumbent; leaves lanceolate [or somewhat spatulate], entire; pappus double; the exterior minute chaffy scales and the bristles few. *Michx.*—Hyoseris montana, *Michx. fl.* 2. *p.* 87.

On the highest mountains of North Carolina, *Michaux.*

180. CYNTHIA. *Don. in Edinb. phil. jour.* 12. *p.* 305; *Less.*; *DC.*

Heads many-flowered. Scales of the involucre 12–15, linear-lanceolate, equal, somewhat in a double series, shorter than the corolla. Receptacle flat, foveolate. Achenia short, obscurely quadrangular, many-striate, not rostrate. Pappus double; the exterior of numerous very small chaffy squamellæ; the inner of numerous capillary and scabrous somewhat deciduous bristles.—Perennial nearly glabrous and somewhat glaucous (North American) herbs; with very smooth undivided or pinnatifid leaves: the scapes or peduncles slender, mostly glandular-hispid at the summit, and bearing single middle-sized heads. Flowers bright yellow.

§ 1. *Caulescent, somewhat branched above: root not tuberiferous: peduncles subumbellate: achenia oblong, slightly narrowed towards the base.*—EUCYNTHIA, DC. (excl. char. invol. calycul.) (Luthera, *Schultz.*)

1. *C. Virginica* (Don, l. c.): leaves oval, spatulate-oblong, or oblong-lanceolate; the radical on short winged petioles, angulate-denticulate, sinuate-toothed, somewhat lyrate, or occasionally deeply pinnatifid; the cauline 1–2, clasping, mostly entire; peduncles 2–5, elongated.—*DC.! l. c.*—C. amplexicaulis, *Beck! bot. p.* 168; *Darlingt.! fl. Cest. p.* 441. C. Griffithii, *Nutt.! in jour. acad. Philad.* 7. *p.* 69. Tragopogon Virginicum, *Linn. spec.* 2. *p.* 789. Hyoseris amplexicaulis, *Michx.! fl.* 2. *p.* 87. H. biflora, *Walt. Car. p.* 194. H. prenanthoides, *Willd. spec.* 3. *p.* 1516. Troximon Virginicum, *Pers. syn.* 2. *p.* 360; *Pursh, fl.* 2. *p.* 505. Krigia amplexicaulis, *Nutt.! gen.* 2. *p.* 127; *Ell. sk.* 2. *p.* 266. Luthera Virginica, *Schultz, in Linnæa,* 10. *p.* 257.

Dry or moist sandy soil, &c., New York! Michigan! and from Lake Winipeg (*Dr. Houghton!*) to Kentucky! and the upper part of Carolina! and Georgia! May–July.—Stem 1–2 feet high, sometimes once or twice forked, somewhat naked. Leaves 2–5 inches long. Peduncles subtended either by a single small bracteant leaf, or by 2 unequal and nearly opposite bracts. Achenia glabrous. Pappus strongly scabrous.—The state with pinnatifid or lyrate radical leaves not at all constant.

§ 2. *Acaulescent: roots tuberiferous: scapes naked, simple: achenia tapering to the base, somewhat turbinate.*—ADOPOGON, DC. (not of *Neck.?*)

2. *C. Dandelion* (DC.! l. c.): scapes usually several from the same root; primary leaves spatulate-oblong; the others linear-lanceolate, elongated, mostly acute, either entire, repand-denticulate, remotely sinuate-toothed, or laciniate-subpinnatifid; the triangular-lanceolate divaricate lobes 2–3 on each side.—C. Dandelion & C. Boscii, *DC.! l. c.* C. lyrata, *Nutt.! in jour. acad. Philad.* 7. *p.* 69. Tragopogon Dandelium, *Linn. spec. ed.* 2. *p.* 1111 (*pl. Gronov.!*); *Willd. l. c.* Troximon Dandelion, *Pers. l. c.* Hyoseris major, *Walt. l. c.* H. angustifolia, *Michx. fl.* 2. *p.* 87; *Pursh, l. c.* Krigia Dandelion, *Nutt.! gen.* 2. *p.* 127; *Ell. l. c.*

β. leaves very narrowly linear and attenuated, either entire or sparingly laciniate-pinnatifid.—Krigia Caroliniana, *Hook.! in compan. to bot. mag.* 1. *p.* 100, not of *Nutt.*

γ. often caulescent and decumbent; leaves either remotely sinuate-pinnatifid or entire; the upper cauline somewhat opposite.—Hyoseris montana, *Michx. fl.* 2. *p.* 87?

Low grounds and fields, Maryland! and Virginia! to Alabama! Louisiana! Arkansas! and Texas! *γ.* Wet rocks at Tulaloo Falls, and mountains of Georgia, *Mr. Buckley!* March–May.—Scapes 6–15 inches high: some of the leaves often almost as long. Roots fibrous, bearing small round tubers at the extremity. Achenia somewhat scabrous. Exterior squamellate pappus always present; the bristles of the inner minutely scabrous.—Our var. *β.*

which has remarkably narrow leaves, passes into the ordinary state, from which C. Boscii, *DC.* is in no way distinguishable. The var. γ. is a singular and probably local form.—The leaves in this and the preceding genera are exceedingly variable in their outline, division, &c., upon which no dependence can be placed for specific characters.

181. SCORZONELLA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7 *p.* 426.

Head many-flowered. Scales of the cylindraceous-ovoid involucre imbricated in 3–4 series, ovate, conspicuously acuminate, membranaceo-chartaceous, nearly as long as the corolla. Receptacle flattish, alveolate. Achenia short, somewhat quadrangular, not attenuate at the apex, many- (10–14-) striate, smooth, obscurely pubescent or glabrous. Pappus of 10 (or rarely fewer) very small and coriaceous ovate chaffy scales, somewhat in two series, which are entire or obscurely denticulate at the apex, each tipped with a very long and capillary scabrous awn.—Perennial nearly glabrous herbs (natives of Oregon); with the habit of Scorzonera: the stems several from the same fusiform or tuberous root, sheathed below the membranous dilated bases of the (usually laciniately pinnately parted) leaves, simple or sparingly branched, naked above, and terminated by solitary heads. Corolla yellow.

The scales of the pappus are certainly distinct, not united at the base into a cup, as described by Nuttall.

1. *S. laciniata* (Nutt.! l. c.): slightly puberulent; leaves pinnately parted: the segments long and slender, linear-subfiliform; scales of the involucre imbricated in 3–4 series, all acuminated from a broad base; scales of the pappus ovate.—Hymenonema? laciniatum, *Hook.! fl. Bor.-Am.* 1. *p.* 301.
Plains of the Oregon, from the Rocky Mountains to the ocean, *Douglas!* &c. Near the mouth of the Wahlamet, *Nuttall!*—A foot high: the long naked peduncles fistulous. Flowers bright sulphur-yellow. The inconspicuous squamellate portion of the pappus several times shorter than the achenium; the bristles about twice the length of the achenium.

2. *S. leptosepala* (Nutt. l. c.): leaves pinnately parted; scales of the involucre in two series; the exterior about 5, ovate; the inner 8, lanceolate, acuminate; scales of the pappus oblong-lanceolate.
With the preceding, and scarcely distinguishable from it, except by the involucre, *Nuttall.*—This is entirely unknown to us.

3. *S. glauca* (Nutt. l. c.): leaves linear-acuminate, canaliculate, glaucous.—Hymenonema? glaucum, *Hook. l. c.*
Oregon, at Fort Vancouver, *Mr. Garry*, ex *Hook.*—This is a doubtful plant, only known by the brief character given by Hooker.

182. CALAIS. *DC. prodr.* 7. *p.* 85. (excl. syn.)

Uropappus, *Nutt.*

Head many-flowered. Involucre cylindraceous, double; the scales lanceolate, acuminate, membranaceous; the exterior 3–6 more or less calyculate;

the interior 8–12 somewhat in 2 series, rather longer than the flowers. Receptacle flat, naked. Achenia terete, slender, attenuate at the summit or rostrate, striate; the minute ribs scabrous. Pappus of 5 linear-lanceolate 1-nerved scarious scales (which are at length convolute around the corolla); the midrib produced into a minutely scabrous awn.—Annual nearly glabrous (Californian) herbs, simple or sparingly branched near the base; the scapiform stems mostly exceeding the linear and attenuated entire or sparingly pinnatifid leaves, naked and fistulous above, terminated by a single head. Corolla yellow.

§ 1. *Achenia scarcely rostrate; the exterior* (Nutt.) (*the inner, ex* Hook. & Arn.) *hirsute with appressed hairs; the others scabrous: the chaffy scales of the pappus dilated at the base, tapering gradually into the long awn: involucre more evidently calyculate.*—EUCALAIS, DC. (Uropappus § Brachycarpa, *Nutt.*)

1. *C. Douglasii* (DC.! l. c.): scapose, somewhat hairy when young; leaves linear-lanceolate, entire, or remotely pinnatifid, with the lobes linear and short (pappus reddish, *DC.*, or straw-color, *Nutt.*).—*Hook. & Arn. bot. Beechey, suppl. p.* 361. Uropappus (Brachycarpa) heterocarpus, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 425.

California, *Douglas, Nuttall.*—Plant 6 inches high. Flowers pale yellow, small. *Nutt.*—We have only seen this plant in the herbarium of De Candolle. The character given by Hooker & Arnott embraces the phrase: "pappi paleis appresse villosis." which is quite true.

§ 2. *Achenia all similar and glabrous, tapering into a short beak, the angles minutely muricate-scabrous: chaffy scales of the pappus bifid at the apex; the midrib produced between the teeth into an awn of variable length: exterior involucral scales unequal.*—CALOCALAIS, DC. (Uropappus § Calocalais, *Nutt.*)

2. *C. linearifolia* (DC.! l. c.): scapose or caulescent; leaves linear, elongated, ciliate with soft hairs when young, often puberulent, as well as the base of the stem, either entire, remotely toothed, or the lower laciniate-pinnatifid (pappus either silvery-white or tawny).—*Hook. & Arn.! l. c.* C. linearifolia & C. Lindleyi, *DC. l. c.* (excl. syn.) Uropappus grandiflorus! U. linearifolius! & U. Lindleyi, *Nutt.! l. c.*

California, *Douglas! Nuttall!*—Plant 10–14 inches high; the long scapoid peduncles very fistulous. The capillary awn much shorter than the chaff of the pappus; one or two of them in some of the flowers scarcely if at all exserted beyond the cleft.—Nuttall's Uropappus grandiflorus is exactly the Douglasian C. linearifolia: his U. Lindleyi is founded merely on the character of De Candolle: his U. linearifolius is a state with rather smaller heads, &c.

183. CICHORIUM. *Tourn.; Linn.; Gærtn. fr. t.* 157; *DC. prodr.* 7. *p.* 84.

Heads chiefly many-flowered. Involucre double; the exterior of about 5 short spreading scales; the inner of 8–10 scales. Achenia somewhat compressed, striate, glabrous. Pappus of numerous very small chaffy squamellæ, in 1–2 series.—Branching herbs (natives of the old world), with the radical leaves toothed or runcinate; the heads axillary and nearly sessile, or terminating the branches. Flowers bright blue, sometimes varying to white.

1. *C. Intybus* (Linn.): lower leaves runcinate, hispid-scabrous on the carinate midrib; the cauline small, oblong or lanceolate, partly clasping, sinuate-toothed or nearly entire; those of the branches inconspicuous; heads mostly 2–3 together, sessile.—*Engl. bot. t.* 538; *Schkuhr, handb. t.* 226; *Pursh, fl.* 2. *p.* 496; *Hook.! fl. Bor.-Am.* 1. *p.* 296; *Darlingt. fl. Cest. p.* 440.
Old fields and road-sides, naturalized in Canada! and the Northern and Middle States! Aug.–Sept.—♃ Flowers showy.—*Wild Succory.*

Subtribe 3. SCORZONEREÆ, *Less.*—Receptacle not chaffy. Pappus of chaffy or stout bristles, which are dilated at the base, or else plumose.

184. STEPHANOMERIA. *Nutt. in trans. Amer. phil. soc. l. c.* 7. *p.* 427.

Heads 3–6-flowered. Involucre cylindrical, composed of 3–5 oblong-linear one-nerved equal scales, and of a few short calyculate scales at the base. Receptacle scrobiculate, naked. Achenia oblong, strongly 5-angled or 5-grooved, glabrous, not rostrate, scarcely if at all attenuated at either end. Pappus (white) of 15–24 plumose filiform bristles (which are gradually but slightly stouter towards the base), in a single series.—Diffuse and much branched rather rigid and glaucescent herbs (natives of the sterile plains, &c. on both sides of the Rocky Mountains), with the aspect of Chondrilla; the lower leaves linear and often runcinate; those of the nearly naked branches minute and bract-like, linear-subulate, entire. Heads small, solitary, terminating the branchlets. Flowers rose-color.

These plants have exactly the habit of Lygodesmia; from which they chiefly differ in their plumose pappus.

§ 1. *Perennial: roots thick and often tortuous: heads 5–6-flowered.*

1. *S. minor* (Nutt.! l. c.): branches somewhat striate; leaves linear-subulate, entire: heads 5-flowered.—Prenanthes? tenuifolia, *Torr.! in Ann. lyc. New York,* 2. *p.* 210, not of Spreng. Lygodesmia minor, *Hook.! fl. Bor.-Am.* 1. *p.* 205, *t.* 103, *A.*
Plains and hills of the Oregon, near the Wallawallah, &c. *Douglas! Nuttall!* Plains of the Platte, *Dr. James!*—July–Aug.—A foot or more in height. Achenia strongly 5-sulcate, sometimes very obscurely wrinkled or rugose, probably smooth and even when mature. Pappus of 16–24 beautifully plumose bristles.

2. *S. runcinata* (Nutt.! l. c.): branches flexuous, somewhat striate; radical and lower cauline leaves runcinate, more or less pubescent when young; those of the fertile branches linear or subulate, the lower often 1–2-toothed; heads 5–6-flowered.—Prenanthes runcinatum, *James, in Long's exped.* P.? pauciflora, *Torr.! in ann. lyc. New York,* 2. *p.* 210. S. runcinata & S. heterophylla, *Nutt.! l. c.*
Plains of the Platte at the base of the Rocky Mountains, *Dr. James! Lieut. Fremont!* Also on Big Sandy Creek, one of the sources of the Colorado of the West, *Nuttall!* July–Aug.—Plant 4–8 inches high.

§ 2. *Annual: heads 3–5-flowered.*

3. *S. paniculata* (Nutt.! l. c.): stems stout, erect, striate, virgate, bearing numerous short paniculate flowering branches; cauline leaves linear, the lower often toothed or sagittate at the base; those of the branches minute; mostly 5-flowered.

Plains of the Rocky Mountains, near the Colorado of the West, *Nuttall!*—Stem 2 feet or more in height. Heads smaller and more slender than in the preceding, terminal and lateral, and subsessile along the branchlets. Achenia 5-angled, obscurely rugose. Bristles of the pappus 15–20, grayish, at length brownish.

4. *S. exigua* (Nutt.! l. c.): diffusely much branched, the branches slender; radical leaves runcinate-pinnatifid; those of the branches reduced to minute scales; heads 3–4- (sometimes 5-) flowered.

Plains of the Rocky Mountains, with the preceding, *Nuttall!*—Heads still smaller than in S. paniculata, scarcely a line in diameter, 3–4 lines in length.

185. RAFINESQUIA. *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 429.

Heads many-flowered. Scales of the cylindraceous involucre about 15, somewhat in 2 series, linear-acuminate from a broadish base, with scarious margins, subtended by a few short and spreading calyculate scales or bracts. Receptacle naked, puncticulate. Achenia terete, nearly even, smooth or the exterior minutely scabrous-pubescent, with the basilar areola terminal, tapering above into a long filiform beak. Pappus of 12–15 uniform slender and fragile plumose bristles, nearly in a single series, deciduous.—An annual corymbosely much branched glabrous herb, with the aspect of a Sonchus. Leaves runcinate or lyrately pinnatifid, clasping, lanceolate; those of the branches small. Heads rather large, terminating the fastigiate minutely bracteate branches. Flowers white.

R. Californica (Nutt.! l. c.)

St. Diego, California, near the coast.—Stem 2–3 feet high, terete, purplish. Involucre at length enlarging at the base and becoming conical, as in Sonchus. Flowers fugacious, but little exserted, externally dark purple in the centre of the ligule. Achenium shorter than the very slender and nearly smooth beak.

186. LEONTODON. *Linn.* (excl. spec.); *Juss.*; *Koch, syn. p.* 418.

Heads many-flowered. Involucre scarcely imbricated; the exterior or accessory scales shorter and bracteolate, in 1–3 series. Receptacle naked, punctate, or sometimes fimbrillate in the centre. Achenia all similar, terete, striate, transversely rugulose, tapering to the apex or somewhat rostrate. Pappus persistent, composed of 1 or 2 series of plumose bristles, which are scariose-dilated at the base, or the exterior short and filiform.—Acaulescent perennial (chiefly European) herbs; with radical, toothed, or pinnatifid leaves. Flowers white.

§ *Scapes usually branched: involucre obconical, many-bracteolate: achenia fusiform: pappus a single series of (dirty white or tawny) equal plumose bristles, which are lanceolate-thickened at the base.*—OPORINIA, Don, DC.

1. *L. autumnale* (Linn.): root præmorse, fibrose; leaves more or less pinnatifid; peduncles paniculate-corymbose, thickened at the summit, and furnished with small scaly bracts; involucre obovoid-oblong, more or less pubescent.—*Koch, syn. fl. Germ. & Helv. p.* 418. Hedypnois autumnalis, *Huds.; Engl. bot. t.* 830. Apargia autumnalis, *Willd.; Schkuhr, handb. t.* 220; *Pursh, fl.* 2. *p.* 497; *Bigel.! fl. Bost. ed.* 2. *p.* 285; *Hook.! fl. Bor.-Am.* 1. *p.* 296. Oporinia autumnalis, *Don, in Edinb. phil. jour.* 6. (1829); *Beck, bot. p.* 168; *DC.! prodr.* 7. *p.* 108.

Newfoundland, *Pylaie! Mr. Cormack!* perhaps native. Naturalized in pastures and roadsides throughout the eastern part of the New England States! Aug.–Oct.

Subtribe 4. LACTUCEÆ, *Cass.* (Lactuceæ & Hieracieæ, *Less., DC.*)—Receptacle not chaffy. Pappus capillary; the bristles mostly soft or fragile, not dilated or thickened at the base, nor plumose.

187. APARGIDIUM.

Head many-flowered. Scales of the campanulate-cylindrical involucre narrowly lanceolate, acuminate, strongly one-nerved; the inner nearly in a single series; the exterior few, short and subulate-bracteolate. Receptacle naked. Tube of the corolla villous. Immature achenia oblong, slightly obcompressed, glabrous, not ribbed, nor attenuated at either end. Pappus of copious rather rigid and fragile barbellate-denticulate capillary bristles, nearly in a single series, scarcely thickened downwards, brownish.—A slender glabrous acaulescent perennial herb; with fibrous-fasciculate often tuberiferous roots, and narrowly linear-lanceolate obscurely denticulate leaves, arising from a short caudex. Head solitary, on an elongated naked scape, at first nodding. Flowers light yellow.

A. boreale.—Apargia borealis, *Bongard! veg. Sitcha, in mem. acad. St. Petersb. l. c. p.* 146. Leontodon boreale, *DC.! prodr.* 7. *p.* 102. Crepis borealis, *C. H. Schultz, ined.*

Sitcha, *Bongard!* Oregon, *Mr. Tolmie!*—Scape longer than the leaves, slender, 4–12 inches high. Leaves 2–4 lines wide, tapering to both ends, acute, one-nerved, furnished with here and there a slight retrorse tooth, somewhat petioled. Head about as large as in the common Dandelion: scales of the involucre erect. Mature achenia unknown.—The pappus is neither plumose nor white, as described by Bongard, but between barbellate and denticulate, and dull light brown.

188. HIERACIUM. *Tourn.; Linn.; Gærtn. fr. t.* 158; *Schkuhr, handb. t.* 221; *DC. prodr.* 7. *p.* 202.

Heads many-flowered. Scales of the involucre imbricated, or only in two series, of which the outer is short and somewhat calyculate.

Receptacle scrobiculate, or slightly alveolate-fimbrillate. Achenia oblong or columnar, often subclavate, rarely fusiform, striate or ribbed, not rostrate. Pappus consisting of a single series of persistent but very fragile denticulate-scabrous bristles, brownish-white or fuscous.—Perennial herbs (chiefly of the northern hemisphere); with entire or toothed leaves, many of the European species stoloniferous; the softer pubescence often stellate; the bristly hairs frequently glandular or denticulate. Flowers yellow, very rarely orange or white.

§ 1. *Involucre imbricated: achenia usually tapering towards the base, but never towards the summit (heads commonly rather large.)*—EUHIERACIUM.

1. *H. alpinum* (Linn.): stem bearing about a single leaf and a solitary ventricose head; leaves oblong-lanceolate, entire or somewhat toothed, bearing both villous and glandular hairs; scales of the involucre rather loose, villous; ligules pubescent externally.—*Engl. bot. t.* 1119; *Frœl.! in DC. prodr.* 7. *p.* 208.

Greenland! (*v. sp. in herb. Greene.*)—The H. pusillum, *Pursh!* (*fl.* 2. *p.* 502), which this author suggests may be only a diminutive variety of H. alpinum, and which is therefore referred to that species by E. Meyer, &c., proves, on examination of the authentic specimen in *herb. Lamb.* (from *herb. Dickson*) to be Erigeron alpinum!

2. *H. vulgatum* (Fries): stem erect, somewhat flexuous, naked above, corymbose at the summit; leaves lanceolate, attenuate at both ends, coarsely [or obscurely] toothed, entire towards the apex, petioled, villous; involucre obtuse, hirsute and glanduliferous; pappus nearly white. *Frœl. in DC.*—*Fries, novit. Suec. ed.* 2. *p.* 259. (H. sylvaticum, *Fl. Dan. t.* 1113, (not of *Linn.*, *Wahl.* &c.) and H. murorum *a*, *Linn*, in part, fide *Fries, l. c.*) H. molle, *Pursh! fl.* 2. *p.* 503, not of *Jacq.* H. sylvaticum, *Schlecht. in Linnæa*, 10. *p.* 87; *Hook. fl. Bor.-Am*, 1. *p.* 299?

Greenland, *Fries.* Labrador, *Kohlmeister! Henne*, ex *Schlecht.* Point Levi, Lower Canada, *Mrs. Sheppard*, ex *Hook.* (if we have correctly referred the synonym.)—A variable species, allied to H. sylvaticum and H. murorum, with the heads resembling in size and form those of H. molle (Crepis hieracioides, *Waldst. & Kit.*), for which Pursh mistook it.

3. *H. prenanthoides* (Vill.): stem simple, strict, leafy, corymbose at the summit; leaves membranaceous, denticulate, ciliate, reticulated and glaucous beneath; the cauline oblong-lanceolate, clasping; the lower narrowed and auriculate at the base; the peduncles and oblong heads glandular-hirsute. *Frœl. in DC. l. c.*—*Vill. Delph.* 3. *p.* 108, & *voy. p.* 58, *t.* 3, *f.* 3; *Fries, novit. Suec. ed.* 2. *p.* 261.

Greenland, *Fries.* (A stouter variety, not glaucous, and hairy throughout.)—Leaves varying from cordate to ovate-oblong, lanceolate, and lingulate, always acute. *Fries.*

4. *H. Canadense* (Michx.): stem erect, simple or sparingly branched above, leafy; leaves sessile, lanceolate or ovate-oblong, acute, sparingly pubescent or hairy, especially on the midrib and veins beneath, or nearly glabrous, scabrous-ciliolate, remotely and often incisely dentate with a few sharp and spreading or divaricate teeth; the upper obtuse at the base, often somewhat auriculate and partly clasping; heads (showy) corymbose; involucre somewhat glabrous; the exterior subulate scales mostly spreading in fruit, the others appressed; receptacle somewhat alveolate, fimbrillate-toothed.—*Michx.! fl.* 2. *p.* 86; *Monnier! ess. Hier. p.* 37. H. virgatum, fasciculatum,

& macrophyllum, *Pursh, fl.* 2. *p.* 504. H. Kalmii, *Spreng. syst.* 3. *p.* 646; *Bigel.! fl. Bost. ed.* 2. *p.* 288; *Torr.! compend.*; not of *Linn.*, *&c.* H. Canadense? hirsutum? (but these are described from garden specimens, which probably belong to H. Sabaudum or H. sylvestre,) helianthifolium, & Sabaudum β. Canadense, *Fræl. in DC. prodr.*—Varies as to pubescence, the size and breadth of the leaves, &c.; and distinguishable, but not definitely so, into the two following forms; the first or Northern state nearly approaching the European; H. umbellatum the second, H. sylvestre, Sabaudum, &c.

α. angustifolium: leaves varying from narrowly to broadly lanceolate.—H. umbellatum, *Richards. appx. Frankl. journ. ed.* 2. *p.* 29; *Hook.! fl. Bor.-Am.* 1. *p.* 300, excl. syn. H. Canadense β. scabruum, *Schweinitz! in Long's 2nd exped. appx.* H. scabriusculum, *Schweinitz! l. c.* H. macranthum, *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 446.

β. latifolium: leaves varying from oblong-lanceolate to lanceolate-ovate; the upper frequently somewhat cordate at the base.—H. macrophyllum, *Pursh, l. c.* H. prenanthoides, *Hook.! l. c.*, excl. syn.

Dry soil in open places, from Massachusetts! and Western New York! to Canada! Lake Superior! &c. (chiefly var. β.); extending (var. α.) north to lat. 66° on Mackenzie River, *Richardson! Drummond!* and west to Oregon, *Nuttall!* July–Aug.—Stem 1–2 feet high, stout, either slightly pubescent, or glabrous below and scabrous-puberulent above, the peduncles downy; or else hirsute, with the downy peduncles sparsely hispid with brownish bristles: the close downy pubescence stellate; the bristly hairs denticulate-scabrous under a lens. Heads pretty large: the involucre either glabrous, slightly pubescent, or sometimes sparingly beset with bristly and somewhat glandular hairs. Leaves thickish and roughish when the plant grows in exposed situations, rather thin and smooth when in shade.

§ 2. *Involucre cylindrical; the inner scales in a single series; the others few and short, calyculate: achenia columnar or fusiform!* (*heads small,* 20–30-*flowered: bristly hairs when present scabrous-serrate or denticulate under a lens.*)—STENOTHECA, Monnier. (Stenotheca & species of Hieracium, *Monnier.* Species of Aracium, *Neck.? Less.*)

* *Natives of Eastern North America.*

5. *H. scabrum* (Michx.): stem rather stout, leafy, scabrous, hirsute or hispid below; the flexuous panicle simple or compound, at first racemose, but at length somewhat fastigiate-corymbose; leaves obovate, oval, or spatulate-oblong, often denticulate, mucronate, hirsute; the upper closely sessile; the thickish peduncles, with the rachis and the base of the somewhat campanulate many- (40–50-) flowered involucre cinereous-tomentose and densely glandular-hispid; achenia columnar, not attenuated at the summit!—*Michx.! fl.* 2. *p.* 86; *Pursh, fl.* 2. *p.* 504; *Monnier, l. c. p.* 31; *Fræl.! in DC. l. c.* H. Marianum, *Willd. l. c.* (*herb.!*) in part; *Ell. l. c.*; *Bigel. fl. Bost. ed.* 2. *p.* 288 (at least in part). H. Gronovii β. *Hook.! fl. Bor.-Am. l. c.*

Borders of woods, &c., from Northern Canada! to Missouri! Kentucky! and the upper part of Georgia! common in the Northern States!—Aug.–Sept.—Stem 1–3 feet high, rough. Upper surface of the leaves hispid or hirsute with scattered bristly hairs, arising from a brownish dilated base. Heads larger than in H. Gronovii, and with more numerous flowers than any other species of this section. The whole panicle is remarkably stiff (the short peduncles divaricate), and thickly beset with brownish glanduliferous hairs, as well as with a close tomentum.

6. *H. longipilum* (Torr.): stem virgate, simple, very leafy towards or near the base, naked and somewhat glabrous towards the summit, bearing a small racemose panicle; the lower portion, and both sides of the oblong-lanceolate or spatulate-lanceolate entire leaves densely clothed throughout with very long and strict slender bristles; the spreading at length subcorymbose peduncles, with the 20–30-flowered involucre, cinereous-pubescent or tomentose and glandular-hispid; achenia fusiform, attenuated at the summit!—*Torr.! in Hook. fl. Bor.-Am.* 1. *p.* 298. (note under H. Scouleri, 1833.) H. barbatum, *Nutt.! in jour. acad. Philad.* 7. *p.* 70 (1834), *& in trans. Amer. phil. soc. l. c.;* not of *Lois.*, or of *Tausch.*

Prairies and open woods, from Michigan! to Illinois! Missouri! and Arkansas! extending nearly to the Rocky Mountains, according to Nuttall. July–Sept.—Stem 15–30 inches high, very strict. Leaves 3–6 inches long, an inch or less in width, tapering to the base, mostly sessile; the uppermost reduced to bracts. Inflorescence nearly as in H. scabrum; the heads smaller than in that species, but larger than is usual in H. Gronovii. Scales of the involucre subulate. Achenia scarcely as much attenuated above as in H. Gronovii. The bristly hairs which so remarkably distinguish this plant, which are either whitish or brownish, are all ascending, not shaggy, but straight and even, as if combed, and are frequently an inch in length! They are slightly dilated or papilliform at the base, and are denticulate under a lens, as in all the species of this section.—We should not have deemed it proper to restore the name under which this singular plant was first indicated, though not fully described, were it not probable that the H. barbatum of Tausch and Reichenbach will continue a distinct species, and necessarily retain that name.

7. *H. Gronovii* (Linn.): stem virgate, leafy and very hirsute below, naked and minutely pubescent towards the summit, forming an elongated panicle; leaves entire or denticulate, mucronulate, pale, villous-hirsute, especially along the midrib beneath and the margins; the radical and lower cauline oblong-obovate or spatulate; the upper oval or oblong, closely sessile or partly clasping; the slender peduncles and the base of the involucre more or less hispid with glanduliferous hairs; achenia fusiform and almost rostrate! —*Linn.! spec. l. c.*, as to pl. *Gronov.; Michx.! fl.* 2. *p.* 87 (*β.* foliosum); *Pursh, fl.* 2. *p.* 503; *Ell. sk.* 2. *p.* 263; *Hook.! fl. Bor.-Am.* 1. *p.* 298 (var. *α.*); not of *herb. Linn., Willd., Fræl. in DC., &c.* H. foliis rad. obverse ovatis, &c., *Gronov.! fl. Virg. p.* 114. H. Marianum Pulmonariæ Gallicæ folio, *Pluk. mant. p.* 102, *t.* 420, *f.* 2. H. Marianum, *Willd. spec.* 3. *p.* 1572 (at least partly!); *Fræl.! in DC. l. c.; Nutt.! in trans. Amer. phil. soc. l. c. p.* 446. Stenotheca Mariana, *Monnier, Hier. p.* 72, *t.* 2, *f. A.*

β. subnudum: stem slender, with one or few leaves near the base, naked and often glabrous above.—H. subnudum, *Fræl. l. c.? (herb. DC.!* partly.) Stenotheca subnuda, *Monnier, l. c. t.* 2. *f. A, no.* 5 (fruit).

γ. hirsutissimum: stem (except the summit) and leaves strongly hirsute with very long shaggy hairs, arising from small papillæ.

Dry sterile soil, common from Canada! to Florida! Louisiana! Arkansas! and Texas! *γ.* Southern and Western States! July–Sept.—The narrow and elongated panicle, the hairy base of the stem, and the achenia tapering so that they might be termed rostrate, abundantly distinguish the depauperate forms of this species from H. venosum. The more robust states have often been confounded with H. scabrum.—From Tampa Bay, Florida, we have a specimen of what appears to be a variety of this species, with the pappus pure white when young, agreeing therefore in every respect with the character of Crepis.

8. *H. venosum* (Linn.): stem or scape naked or with a single leaf, glabrous, slender, several times dichotomous, forming a diffuse compound corymb (the divisions subtended by a subulate bract); radical leaves obovate

or spatulate-oblong, entire or obscurely denticulate, slightly petioled, thin and pale, often purplish and glaucous beneath, mostly with purple veins, the margins and especially the midrib beneath villous, the surfaces often glabrous; the filiform divaricate peduncles and base of the involucre either glabrous or sparsely and minutely hispid with short glanduliferous hairs; achenia linear (very obscurely if at all narrowed at the summit).—*Linn. spec.* 2. *p.* 800; *Willd.! spec.* 3. *p.* 1570; *Pursh, fl.* 2. *p.* 502; *Ell. sk.* 2. *p.* 262; *Hook. fl. Bor.-Am.* 1. *p.* 297; *Darlingt.! fl. Cest. p.* 446; *Frœl.! in DC. prodr.* 7. *p.* 217. Stenotheca venosa, *Monnier, Hier. p.* 72.

β. subcaulescens: stem more or less leafy near the base; the cauline leaves varying from ovate to lanceolate, sessile or slightly clasping.—H. Gronovii, *Linn.! herb.*, & *spec.* 2. *p.* 802, as to char. (not as to syn. *Gronov.!*); *Willd.! l. c.; Michx. fl.* 2. *p.* 87 (var. *a.*); *Monnier, l. c. p.* 30; *Frœl.! in DC. l. c.*

In dry soil, pine woods, &c., Canada! and Saskatchawan! to Kentucky! and the upper portion of Georgia! &c.: most abundant in the Northern and New England States! May–July.—Scape 1–2 feet high. Earlier radical leaves appressed to the ground, sparsely hirsute above; the cauline when present at length glabrous. Heads small, about 20-flowered: the ligules long, bright yellow. Inner or principal scales of the involucre about 10, glabrous or nearly so.—There is no specimen in the herbarium of Linnæus with this name: we know not whence he obtained the character, "scapo crassissimo."—*Hawk-weed. Rattle-snake-weed.* (One of the reputed antidotes to the bite of venomous snakes.)

9. *H. paniculatum* (Linn.): stem slender, leafy, paniculate, villous towards the base; leaves lanceolate or oval-lanceolate, acute at each end, denticulate, sessile, membranaceous, glabrous; panicle diffuse, mostly compound, dichotomous; the slender filiform branches and peduncles divaricate, nearly glabrous, as well as the (few) scales of the 12–20-flowered involucre; achenia short, not at all contracted at the apex.—*Linn.! spec.* 2. *p.* 802; *Michx.! fl.* 2. *p.* 86; *Pursh, l. c.; Hook.! l. c.; Darlingt.! fl. Cest. p.* 447; *Frœl.! in DC. prodr.* 7. *p.* 222.

Woodlands, Canada! and Northern States! to the mountains of Georgia! Aug.–Sept.—Heads smaller than in any other species of the genus: the involucre of fewer scales even than H. venosum; but the achenia as in the proper Hieracia.

* * *Natives of Oregon and the North West Coast.*

10. *H. triste* (Willd. herb.): stem slender, simple, bearing one or two leaves, and few or several racemose or paniculate heads; leaves oblong-spatulate, entire or obscurely denticulate, villous or nearly glabrous, tapering into slender petioles; the upper cauline lanceolate; peduncles, the summit of the stem, and especially the involucre cinereous-woolly and hirsute with long brownish hairs (which are seldom glanduliferous); achenia oblong, not narrowed at the summit.—*Spreng.! syst.* 3. *p.* 640. H. triste & H. arcticum, *Frœl. in DC. prodr.* 7. *p.* 209. H. gracile, *Hook.! fl. Bor.-Am.* 1. *p.* 298, not of *Frœl. in DC. l. c. p.* 231. H. Hookeri, *Steud. nomenc. ed.* 2. *p.* 763.

Unalaschka, Norfolk Sound, &c. *Chamisso!* Northern and higher Rocky Mountains, *Drummond!*—A span to a foot or more high. Heads about as large as in H. venosum: the ligules very short. Involucre &c. remarkably clothed with long grayish-brown hairs.

11. *H. Scouleri* (Hook.): stem paniculate-branched, either smooth and glabrous, except the base, or hispid with divaricate-spreading long bristly hairs, leafy below; leaves lanceolate-oblong, acute or mucronate, mostly

entire, sessile or nearly so, hispid with spreading hairs; panicle compound; the erect peduncles and the (about 20-flowered) involucre more or less glandular-hispid; achenia columnar, not narrowed at the summit.—*Hook.! fl. Bor.-Am.* 1. *p.* 298.

Nootka, and at the mouth of the Oregon, *Dr. Scouler!* On the Wahlamet, *Nuttall.*—A foot high, clothed with fuscous or brownish bristly hairs (distinctly denticulate under a lens), like those of H. longipilum, except that they are much shorter and spreading. Heads small; the involucre sparingly calyculate, clothed with short mostly glanduliferous hairs, or in some specimens nearly glabrous.—We suppose that the specimen from Pennsylvania, mentioned by Hooker, belongs to H. Gronovii.

12. *H. albiflorum* (Hook.): stem simple, naked and glabrous above, bearing a compound corymb, leafy and hispid near the base, like the petioles and midrib of the leaves, with slender reflexed bristly hairs; leaves lanceolate-oblong, hirsute, entire; the lower tapering into a short petiole, the uppermost small and sessile; peduncles short, divaricate, minutely bracteolate, nearly glabrous; the scarcely calyculate involucre very sparingly hirsute with slender bristly hairs; achenia columnar, not narrowed at the summit; flowers white!—*Hook.! fl. Bor.-Am.* 1. *p.* 298; *Nutt.! in trans. Amer. phil. soc. l. c. p.* 446.

Alpine woods in the Rocky Mountains, north of Smoking River, lat. 56°, *Drummond!* Also around Fort Vancouver, Oregon, *Nuttall.*—Stem 1–3 feet high. Heads about as large as in H. venosum.

‡ *Obscure or little-known species.*

13. *H.? Kalmii* (Linn.): stem erect, many-flowered; leaves lanceolate, toothed; peduncles tomentose. (Stem erect, smooth, narrower than in H. Sabaudum. Leaves lanceolate, alternate, subsessile, small, naked, acuminate, dentate with sharper spreading teeth than in any other species of the genus. Peduncles alternate at the summit of the stem, commonly simple and one-flowered, whitish-tomentose; bracts few and sparse, linear. Flowers small, terminal, erect.) *Linn.! spec.* 2. *p.* 804; not of *Spreng.* &c., neither of *Monnier* (under the name of Sclerolepis), nor of *Less.* (under the name of Pachylepis.)

Pennsylvania, *Kalm.* (*v. sp. in herb. Linn.*)—Heads and flowers about as large as in Erigeron strigosum. Scales of the involucre narrowly linear, glabrous, not rigid, plane, in a single series, with a few exterior and shorter ones. Corolla apparently yellow. Receptacle naked? Ovaries similar in all the flowers, somewhat turbinate, glabrous, not striate, neither rostrate nor in the least attenuated at the summit. Pappus a single series of fragile strongly denticulate-scabrous bristles, brownish-white.—It is singular that this plant, if it were really collected in Pennsylvania, has never been met with since the time of Kalm. The above particulars, which an inspection of the original specimen enables us to add to the excellent general description of Linnæus, clearly show that this lost species has no affinity whatever with the plant which Monnier (we know not on what grounds) mistook for it, and described under the name of *Sclerolepis Kalmii* (*Ess. Hierac. p.* 81, *t.* 4, *f. D.*), and which is adopted by Lessing (*Syn. Compos. p.* 139) and De Candolle (*Prodr.* 7. *p.* 98), under the name of *Pachylepis*. Monnier does not state the source whence his specimens were derived; but we are confident that his plant (which is nearly allied to Zacintha and Pterotheca) is not of North American origin, and therefore have not introduced it into our Flora.

14. *H. argutum* (Nutt.): leaves and base of the stem clothed with long reflexed hairs; stem smooth, paniculate, the branches divaricate, with long naked and smooth pedicels; leaves oblong or oblong-lanceolate, all incisely

and sharply toothed, acute; the cauline few and sessile; involucre small, slightly bracteolate, smooth and blackish-green, of few scales in about 2 series; pappus gray and scabrous; achenia not attenuate at the summit; flowers white? *Nutt. in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 447.

St. Barbara, California, *Nuttall.*—This plant is unknown to us; and only a single specimen was collected.

189. NABALUS. *Cass. dict.* 34. *p.* 94 (1825); *Hook. fl. Bor.-Am.* 1. *p.* 293.

Harpalyce, *Don* (1829), not of *DC.*—Species of Prenanthes, *Linn.*

Heads several-(6–30-) flowered. Involucre cylindrical, of 5–14 linear scales in a single series, and calyculate with several short accessory scales. Receptable naked. Branches of the style much exserted. Achenia linear-oblong, cylindraceous, striate or grooved, smooth, not contracted at the apex. Pappus of copious straw-color or brownish scabrous capillary bristles, somewhat fragile.—Perennial (North American) herbs; the erect leafy stem arising from a fusiform simple or branched tuber, which is extremely bitter to the taste. Leaves entire, or variously lobed. Head racemose or paniculate, usually nodding. Flowers whitish, ochroleucous, cream-color, or purplish.

§ 1. *Heads pendulous: involucre calyculate, few–several-flowered, glabrous (rarely more or less hairy).* (*Leaves very variable in the same species.*)

1. *N. albus* (Hook.): nearly glabrous, slightly glaucous, stem corymbosely paniculate at the summit (usually purplish); leaves angulate-hastate, irregularly toothed, sinuate-incised, or sometimes either palmately or somewhat pinnately 3–5-lobed or parted (the lobes or undivided leaves mostly obtuse, mucronate); the lower petioled; the uppermost usually oblong, subsessile; heads in short spreading racemes or panicles, somewhat corymbose; involucre (glaucous and usually purplish) of about 8 scales, 8–12-flowered; pappus deep cinnamon-color.—N. albus & N. serpentarius, *Hook. l. c.* (in part, and as to syn.) N. suavis, *DC.! l. c.* N. trifoliolatus, *Cass. in dict. sci. nat.* 34. *p.* 95. Prenanthes alba, *Linn.! hort. Cliff. p.* 383, & *spec. l. c.* (excl. *β.*); *Michx.! fl.* 2. *p.* 83; *Bot. mag. t.* 1079; *Pursh, l. c.*; *Bigel. fl. Bost. ed.* 2. *p.* 286 (partly); *Darlingt. fl. Cest. p.* 444 (partly). P. suavis, *Salisb. parad. Lond. t.* 85. P. rubicunda, *Willd.! spec.* 3. *p.* 1537 (*ex herb.*), excl. syn. P. Miamensis? ovata, & proteophylla, *Riddell, l. c.* Chondrilla alba, *Lam.*

β. Serpentaria: cauline leaves on slender petioles, deeply sinuate-pinnatifid or 3-parted, the terminal lobe 3-cleft, often sparsely ciliate with rough hairs.—Prenanthes Serpentaria, *Pursh, fl.* 2. *p.* 499, *t.* 24. Harpalyce Serpentaria, *Don, in Edinb. new. phil. journ.* 6. *p.* 305; *Beck, l. c.*

Open grounds and borders of woods, Newfoundland! Canada! and Northern States! to the Upper Mississippi! and the Mountains of the Southern States! Aug.–Sept.—A stouter plant than N. altissimus; the stem sometimes spotted. Leaves very variable, pale beneath; the margins mostly somewhat scabrous and ciliate. Heads half an inch or more in length. Achenia scarcely striate. Corolla white or ochroleucous, sometimes tinged with purple.—*White Lettuce. Lion's Foot. Rattlesnake-root.*

2. *N. altissimus* (Hook.): glabrous or nearly so; stem virgate; leaves (membranaceous) all petioled, either undivided or the lower palmately 3–5-

cleft, parted, or even divided; the lobes or leaves acuminate, repandly toothed or denticulate; heads in small axillary and terminal clusters, forming an elongated virgate panicle; involucre slender (greenish), of 5 scales, 5–6-flowered; pappus dirty white, or straw color.—*Hook.! fl. Bor.-Am.* 1. *p.* 294; *DC. prodr.* 7. *p.* 241 (ex syn.) (N. albus & N. serpentarius, *Hook. l. c.*, at least in part, fide *spec.!*) Sonchus elatus, &c. *Pluk.! alm. t.* 317, *f.* 2. Prenanthes altissima, *Linn.*[*] *spec. ed.* 2. *p.* 1121 (ex char. & syn. *Pluk.*); *Pursh, fl.* 2. *p.* 498; *Ell. sk.* 2. *p.* 256. P. parviflora, *Riddell, syn. Western plants, p.* 50. Chondrilla altissima, *Lam. dict.* 2. *p.* 78. Harpalyce altissima, *Beck, bot. p.* 167.

β. *ovatus:* cauline leaves nearly all ovate, abruptly contracted into winged petioles.

γ. *cordatus:* leaves mostly cordate, on slender petioles.—N. cordatus, *Hook. l. c.* Prenanthes cordata, *Willd.! hort. Berol. t.* 25; *Pursh, l. c*; *Ell. l. c.*

δ. *deltoideus:* leaves deltoid, strongly repand-toothed; the upper often cordate, on margined petioles; the radical and lowest cauline triangular-hastate, sometimes 3-parted.—N. deltoideus & N. cordatus! *DC. l. c.* Prenanthes deltoidea, *Ell.! sk.* 2. *p.* 257.

ε. *dissectus:* leaves all 3-parted or divided; the segments either entire or deeply 2–3-cleft; the lobes narrowly lanceolate or linear.

Woods, Newfoundland! Canada! and Northern States! to Kentucky! and the mountains of Georgia! Aug.–Sept.—Stem 3–5 feet high, rather slender, either simple or sparingly paniculate at the summit, sometimes pubescent below, as well as the midrib and margins of the leaves. Corolla yellowish or greenish-white.—A well-marked species, notwithstanding the extremely variable foliage, of which we have enumerated the most striking forms.

3. *N. Fraseri* (DC.! l. c.): glabrous or slightly puberulent; stem corymbose-paniculate at the summit; leaves mostly deltoid, usually somewhat scabrous, variously and often pinnately 3–7-lobed, and contracted into winged or margined petioles (the lobes short and mostly sinuate-denticulate); the upper subsessile, oblong-lanceolate, often undivided; racemes paniculate; involucre (greenish or slightly tinged with purple,) either glabrous or with a few scattered hairs, of about 8 scales, 8–12-flowered; pappus straw-color.—N. trilobatus, *Cass. in dict. sci. nat. l. c.?* N. Fraseri, N. trilobatus & N. serpentarius *β.? DC.! l. c.* Prenanthes folio scabro inciso ... floribus dilute luteis, &c., *Clayt.! in Gronov. fl. Virg.* 3. *p.* 133. P. rubicunda, *Pursh, fl.* 2. *p.* 499, excl. syn. P. alba, *Ell. sk.* 2. *p.* 259.

β. *integrifolius:* leaves thickish, lanceolate-oblong, acute or obtuse, denticulate, or sharply and irregularly toothed; involucre often somewhat hairy.—N. integrifolius, *Cass. l. c.; DC.! l. c.*

γ. *barbatus:* leaves thickish, lanceolate or oblong, mostly sessile; the upper often somewhat auriculate-clasping, sinuate-toothed or nearly entire; racemes paniculate; involucre (12–15-flowered) hirsute when young with long purplish hairs!—Prenanthes crepidinea, *Ell. sk.* 2. *p.* 259, not of *Michx.*

Dry sterile or sandy soil, from Florida! and Alabama! to New York! Connecticut! and Newfoundland? β. Long Island, New York! and North Carolina! γ. Saluda Mountains of Carolina, *Dr. Macbride.* Alabama, *Mr. Buckley!* Sept.–Oct.—Stem 1–4 feet high, usually much branched: the leaves exceedingly variable. Flowers cream-color or ochroleucous.—This species, most abundant in the Southern States (where it is called *Gall-of-the-Earth*), resembles N. albus in its mode of growth, number of flowers, &c., but N. altissimus in its pappus. The very remarkable var. γ. but appears to pass through var. β. into the ordinary state of the plant.

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[*] The specimens of Prenanthes altissima and P. alba are evidently transposed in the Linnæan herbarium!

4. *N. nanus* (DC.): glabrous; stem simple, low; leaves deltoid-hastate, angulate, or variously lobed or cleft, on slender petioles; heads in small axillary and terminal clusters, forming a strict racemose panicle; involucre (livid or blackish-green) 10–13-flowered, of about 8 obtusish proper scales; the bracteolate scales very short, triangular-ovate, appressed; bracts and bracteoles minute and subulate; pappus dark straw-color.—*DC.! prodr.* 7. *p.* 241. Prenanthes alba, var. nana, *Bigel.! fl. Bost. ed.* 2. *p.* 286; *Torr.! compend. p.* 277 (partly). Harpalyce alba β. *Beck. bot. p.* 167.

Alpine region of the White Mountains of New Hampshire! and of Essex County, New York! Aug.–Sept.—Plant 5–10 inches high. Leaves varying in the same manner as those of N. altissimus, either all undivided and hastate-triangular, angulate-toothed, or hastate-3-lobed; or else the lower or the whole 3-parted, with the divisions 2–3-cleft or entire, oblong or lanceolate, often somewhat ciliate when young, as well as the tips of the involucre. Heads nearly as large as in N. albus. Flowers whitish.

5. *N. Boottii* (DC.): stem simple, dwarf, pubescent at the summit when young; radical and lowest cauline leaves subcordate or hastate-cordate, obtuse; the middle oblong; the upper lanceolate, mostly entire, tapering into a margined petiole; heads in a simple or nearly simple raceme, slightly nodding; bracts and bracteoles linear; involucre (livid) 10–18-flowered, of 10–15 obtuse proper scales; the calyculate scales linear, lax, unequal, nearly half the length of the proper involucre; pappus straw-color.—*DC.! prodr.* 7. *p.* 241. Prenanthes alba, var. nana, in part, *Bigel.! l. c. &c.*

Higher alpine summits of the White Mountains of New Hampshire! On the extreme summit of Whiteface Mountain, Essex County, New York, *Mr. Macrae!* Aug.–Sept.—Plant 5–8 inches high. Scales of the involucre very obtuse, pubescent-ciliate when young; the calyculate scales nearly similar, but shorter and unequal. Flowers whitish.—Nearly allied as is this species to the preceding, yet the characters we have indicated appear to be constant. According to Mr. Tuckerman, the flowers are odorous in this species, but not in N. nanus.

6. *N. virgatus* (DC.): glabrous, somewhat glaucous; stem virgate, very simple; cauline leaves lanceolate, acute, closely sessile or partly clasping; the upper entire and gradually reduced to bracts; the lower toothed or pinnatifid; the radical tapering into a margined petiole, sinuately or runcinately and often deeply pinnatifid; the lobes lanceolate-linear or oblong; heads in small clusters, on short many-bracteolate peduncles (the minute bracteoles subulate), forming a very long and slender mostly unilateral spicate raceme; involucre (smooth and purplish) of about 8 proper scales, 8–12-flowered; pappus straw-color.—*DC.! l. c.*—Prenanthes virgata, *Michx.! fl.* 2. *p.* 83; *Willd.! spec.* 3. *p.* 1533; *Pursh, fl.* 2. *p.* 498; *Ell. sk.* 2. *p.* 258. P. simplex, *Pursh, l. c.* excl. syn. P. autumnalis, &c. *Gronov.! fl. Virg. ed.* 2. *p.* 113; *Walt.! Car. p.* 193. Sonchus virgatus, *Desf.*, ex *Steud.* Harpalyce virgata, *Beck. bot. p.* 167.

Moist places, in sandy fields and pine barrens, New Jersey! to Florida! in the low country. Sept.–Oct.—Stem 2–4 feet high; the naked wand-like raceme 1–2 feet long. Flowers purplish. ('*Dr. Witt's Snake-root.*' Clayt.)

§ 2. *Heads nodding or erect: involucre calyculate,* 12–35-*flowered, hirsute.* (*Leaves mostly undivided.*)

7. *N. racemosus* (Hook.): stem virgate, simple, and with the leaves smooth and glabrous; radical and lower cauline leaves oval, oblong, or oblanceolate,

sharply denticulate, tapering into winged petioles; the upper lanceolate or ovate-lanceolate, partly clasping, entire; heads in short racemes or fascicles, scarcely spreading, forming a long and narrow interrupted spicate panicle; involucre (of 8–10 scales) with the short peduncles very hirsute, about 12-flowered; pappus straw-color.—*Hook.! fl. Bor.-Am.* 1. *p.* 294; *DC.! l. c.* Prenanthes racemosa, *Michx.! fl.* 2. *p.* 84; *Torr.! compend. p.* 277. Harpalyce racemosa, *Don, l. c.; Beck, bot. p.* 168.

β. spicate panicles numerous, elongated (6–8 inches), crowded, forming a thyrsiform compound inflorescence.

γ. leaves deeply and irregularly laciniate-pinnatifid!

Canada! (Northern Canada, *Michaux!*) and Saskatchawan! Wisconsin! and Michigan! to the plains and prairies of Ohio! Also Hackensack marshes, New Jersey! β. & γ. Hackensack marshes, *Mr. J. Carey!* Sept.—Stem 2–5 feet high, striate. Flowers flesh-color or light purple.

8. *N. asper:* stem virgate, simple, and with the sessile leaves scabrous-pubescent; lower leaves oval-oblong, narrowed at the base, irregularly and sharply toothed; the upper oblong-lanceolate, closely sessile, often entire; heads mostly erect, in small fascicles, forming a long and narrow compound raceme; the short peduncles and rachis woolly-hirsute; involucre of 8–9 scales, very hirsute, 12–14-flowered; pappus straw-color.—N. Illinoensis, *DC. l. c.* Prenanthes aspera, *Michx.! fl.* 2. *p.* 83 (1803). P. Illinoensis, *Pers. syn.* 2. *p.* 366. Chondrilla Illinoensis, *Poir. suppl.* 2. *p.* 331.

Dry barrens and prairies of Ohio! Indiana! Illinois! Kentucky! Western Louisiana! and Upper Missouri! Sept.—Stem 2–4 feet high. Leaves small. Heads larger than in the preceding; the hairs of the involucre often purple. Flowers sulphur or cream-color.

9. *N. crepidineus* (DC.! l. c.): somewhat glabrous; stem tall and stout, corymbose-paniculate; leaves (ample) unequally toothed; the radical deltoid-hastate, the lower cauline triangular-ovate or deltoid-lanceolate, on winged petioles; those of the branches ovate-lanceolate or oblong, somewhat petioled; heads in small paniculate clusters, nodding, on short pubescent peduncles; involucre of 12–14 proper scales, hirsute, 20–35-flowered; pappus brownish. —Prenanthes crepidinea, *Michx.! fl.* 2. *p.* 84. P. gigantea, *Raf.! in herb. DC.* Hieracium crepidineum, *Fræl. mss.*

Borders of thickets and cultivated fields, Ohio! Indiana! and Illinois! to Kentucky! and the high mountains of Carolina. Aug.–Oct.—Plant 5–8 feet high. Lower leaves sometimes a foot long. Heads campanulate-cylindrical, large. Involucre blackish. Flowers ochroleucous.

§ 3. *Heads nearly erect, corymbose: involucre ecalyculate (with one or two inconspicuous bracteolate scales), somewhat pubescent, few-flowered.* (Indigenous to the North West Coast.)

10. *N. alatus* (Hook.): nearly glabrous; stem paniculate-corymbose at the summit; leaves membranaceous, deltoid, acuminate, sharply or laciniately toothed, with long winged petioles; the radical cordate; the uppermost cauline lanceolate, sessile; heads loosely corymbose; involucre of 7–9 lanceolate somewhat acuminate minutely pubescent scales, 7–9-flowered; pappus straw-color.—*Hook.! fl. Bor.-Am.* 1. *p.* 294, *t.* 202. Sonchus hastatus, *Less. in Linnæa,* 6. *p.* 99; *Bongard, veg. Sitcha, l. c. p.* 146. Mulgedium hastatum, *DC.! prodr.* 7. *p.* 250.

Unalaschka, &c. *Chamisso!* Sitcha (also Kamtschatka), *Bongard.* Observatory Inlet and Fort Vancouver, *Dr. Scouler!*—Plant a foot or more high. Root or tuber small, fusiform. Flowers flesh-color. *Mertens* (*Bongard*).

190. LYGODESMIA. *Don, in Edinb. phil. jour.* 6. *p.* 305 (excl. spec.); *Hook. fl. Bor-Am.* 1. *p.* 295; *DC.*

Lygodesmia & Erythremia, *Nutt.*

Heads 5–10-flowered. Involucre elongated cylindrical, of 5–8 linear scales in a single series, and calyculate with a few very short imbricated bracteolate scales. Receptacle scrobiculate. Branches of the style much exserted. Achenia linear, elongated, somewhat cylindrical, striate, smooth, not contracted at the apex. Pappus of very copious and scarcely scabrous whitish capillary bristles, in many series, rather persistent.—Perennial glabrous and somewhat glaucous rigid branching herbs (natives of sterile plains chiefly beyond the Mississippi), with the habit of Chondrilla: the leaves linear or subulate, entire; those of the branchlets reduced to mere scales. Root perpendicular. Heads solitary terminating the stem or branches, erect. Flowers reddish-purple or rose-color.

This genus differs from Prenanthes and Nabalus rather in its striking habit than in any marked or important floral characters.

§ 1. *Heads 5-flowered: pappus soft: stems very much branched, not spinescent.*—EULYGODESMIA.

1. *L. juncea* (Don! l. c.): stems very much branched, striate; lower linear-sublanceolate, rigid; the upper subulate.—*Hook.! fl. Bor.-Am.* 1. *p.* 295, *t.* 103; *DC. prodr.* 7. *p.* 198. Prenanthes juncea, *Pursh! fl.* 2. *p.* 498; *Nutt.! gen.* 2. *p.* 123.
Plains of the Missouri and Platte to the Rocky Mountains, *Lewis? Nuttall! Dr. James! Lieut. Fremont!* and of the Saskatchawan, *Drummond!* May–June.—About a foot high. Lower leaves 1–2 inches long. Flowers purple according to Pursh, rose-color according to Nuttall, blue according to Hooker. Pappus extremely copious, at first nearly white; the soft slender bristles scarcely at all scabrous. Mature achenia slender, half an inch long.

§ 2. *Heads 4–5-flowered: pappus rather rigid: stems divaricately much branched: the branchlets spinescent.*—PLEIACANTHUS, Nutt.

2. *L. spinosa* (Nutt.): stem and branches not striate, rigid; lower leaves linear, thickish; those of the branches reduced to minute bracts; proper scales of the rather short cylindraceous involucre about 4, lanceolate; the calyculate scales conspicuous, ovate.—*Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 444.
Plains of the Rocky Mountains towards California, *Nuttall!*—A span to a foot high, divaricate and spreading; "the base somewhat pubescent, and producing remarkably large tufts of brownish matted down." *Nutt.* Flowers rose-red. Pappus less copious and more rigid than in the preceding, by no means barbellate, as described by Nuttall, but appearing very slightly scabrous under a good lens. Mature achenia not seen.

§ 3. *Heads about 10-flowered: pappus rather soft: stems scapiform, sparingly branched: leaves mostly radical, linear and elongated, somewhat fleshy.* —ERYTHREMIA, Nutt.

3. *L. grandiflora:* dwarf; stems several from the same root (a span high), scarcely longer than the narrowly linear radical leaves.—Erythremia grandiflora, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 445.

Borders of the Platte, near the Rocky Mountains, *Nuttall!*—Heads large for the size of the plant, equalling those of the following species. Proper scales of the involucre about 8; the calyculate scales ovate, ciliate. Ligules large and showy, rose-red. Achenia unknown. Pappus somewhat evidently denticulate-scabrous towards the base.

4. *L. aphylla* (DC. l. c.): stem slender, elongated, striate-angled, sparingly dichotomous towards the summit, many times longer than the attenuated linear-filiform chiefly radical leaves; bracts minute at the origin of the branches.—Prenanthes pumila, *Baldwin! mss.* P. aphylla, *Nutt.! gen.* 2. *p.* 123, *& in Sill. jour. p.* 299; *Ell.! sk.* 2. *p.* 261. Erythremia aphylla, *Nutt.! l. c. p.* 446.

β. Texana: stem stouter; leaves flattish, sparingly and remotely pinnatifid-laciniate. (Perhaps a distinct species.)

Pine barrens, St. Mary's, Georgia, *Baldwin!* Florida, *Mr. Croom! Dr. Chapman! Dr. Leavenworth!* &c. *β.* Texas, *Drummond!*—Stem about 2 feet high, nearly naked. Heads showy; the cylindrical involucre nearly an inch long: the calyculate scales very small, ciliate. Ligules large, rose-color. Achenia very long and slender. Pappus slightly fawn-colored, scarcely scabrous.

191. MALACOTHRIX. *DC. prodr.* 7. *p.* 192. (char. imperfect.)

Malacomeris, Leucoseris, & Leptoseris, *Nutt.*

Heads many-flowered. Involucre broadly campanulate or hemispherical; the scales narrow, numerous, more or less imbricated in 2–3 series, the exterior often calyculate. Receptacle naked. Ligules narrow. Achenia oblong, truncate at both ends, angled or nearly terete, 8–15-striate or ribbed, smooth, glabrous; the summit furnished (as in Andryala and many Hieracia) with a minute or inconspicuous crenulate or many-toothed ring, surrounding the base of the true pappus. Pappus consisting of a single series of slender and rather soft silvery-white capillary bristles (20–40 in number), which are serrulate-scabrous towards the apex, but minutely and sparsely barbellate near the base, deciduous.—Californian herbs (with a single and dubious exception), of somewhat varied aspect, mostly with a deciduous pubescence, and pinnatifid or undivided leaves. Flowers yellow or white.

This genus is most allied to Andryala; with which the section Leucoseris nearly agrees in habit, and from which the naked receptacle, the different pubescence, &c. chiefly distinguish it.

§ 1. *Annual, acaulescent: scales of the involucre narrowly linear, acuminate, in 2–3 series; the exterior shorter and loose: flowers yellow.*—EUMALACOTHRIX.

1. *M. Californica* (DC.! l. c.): softly and loosely villous when young, at

length somewhat glabrous; leaves all radical, clustered, linear-filiform, entire, or mostly sparingly pinnately-parted, much shorter than the naked simple scapes; heads solitary; immature achenia crowned with a minute pectinate border simulating an obscure setulose exterior pappus.

California, *Douglas!*—Scapes several from the slender and simple perpendicular root, fistulous, perfectly leafless, a span or more in height, terminated by a rather large head. Leaves very slender. Mature achenia unknown; the immature linear-oblong (certainly not obovate), obscurely striate. Pappus long, separating somewhat in a ring.

§ 2. *Suffruticose and perennial? subcaulescent: scales of the involucre linear, in about* 2 *rather unequal series, and with several calyculate bracteoles: flowers yellow.*—MALACOMERIS, Nutt.

2. *M. incana:* canescently tomentose with a somewhat deciduous wool; leaves chiefly radical, clustered, irregularly pinnatifid; the lobes (3–7) remote, short, oblong-linear; stem scapoid, bracteate, usually somewhat branched, and bearing 2 or 3 heads; achenia angled, many-striate, the border obsolete.—Malacomeris incana, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 435.

St. Diego, California, on an island in the bay, *Nuttall!*—Low, decumbent, nearly a span high; the radical leaves in close clusters, shorter than the flowering stems. Heads smaller than in the preceding. Achenia small, brownish. Pappus exactly as in M. Californica, but more copious.

§ 3. *Annual, subcaulescent* (*heads only* 30–40-*flowered*) *: scales of the involucre in* 2 *series; the inner linear-lanceolate,* 12–15, *equal; the outer short and unequal, calyculate, appressed: flowers yellow.*—LEPTOSERIS, Nutt.

3. *M. sonchoides:* dwarf, glabrous; stems branching, somewhat corymbose; leaves linear-oblong, runcinate; the cauline small and scattered; the radical with short approximate lobes, spinulose-denticulate; achenia somewhat angled, striate-ribbed, crowned with a very minute and denticulate border, simulating an exterior obscure coroniform pappus.—Leptoseris sonchoides, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 438.

Plains of the River Platte, *Nuttall!* June.—Plant 4–5 inches high, with several stems springing from a slender tap-root, bearing small heads, which resemble those of a Crepis. Exterior scales of the involucre erose-denticulate. Pappus exactly as in the preceding, but shorter, deciduous in a ring. Achenia pale.

§ 4. *Perennial, caulescent, leafy: scales of the involucre numerous; the inner linear, equal, appressed, in about* 2 *series; the outer short and calyculate, subulate, spreading, copious: flowers white.*—LEUCOSERIS, Nutt.

4. *M. saxatilis:* somewhat pubescent when young; stems diffuse or decumbent, leafy, branching; leaves fleshy, linear-oblong, obtuse, mostly entire; the lower occasionally somewhat serrate or pinnatifid towards the base; heads few, somewhat fastigiate; peduncles with minute subulate bracteoles; calyculate scales subulate-lanceolate, very numerous, imbricated; achenia somewhat angled, strongly ribbed, crowned with a minute denticulate border.—Leucoseris saxatilis, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 440.

St. Barbara, California, on shelving rocks near the sea, *Nuttall!* April.—Stems 1–2 feet long. Leaves 2–3 inches in length, half an inch wide, often auriculate at the base, and partly clasping. Heads as large as those of the

Dandelion. Flowers very numerous, pure white. Achenia dark brown. Pappus as in the rest of the genus.

5. *M. commutata:* herbaceous, glabrous; stem erect, fistulous, striate, leafy, racemose-corymbose at the summit; leaves lanceolate-linear, sessile, acute, denticulate, those of the branches entire; heads terminating the simple branches; calyculate scales of the involucre subulate, squarrose-spreading, rather numerous; the proper scales very narrow and acute.—Hieracium? Californicum, *DC.! prodr.* 7. *p.* 235. Sonchus? Californicus, *Hook. & Arn. bot. Beechey, suppl. p.* 361. Leucoseris Californica, *Nutt. l. c.*

California, *Douglas!*—Stem 1–2 feet high. Leaves not fleshy, much narrower than in the preceding (to which it is very closely allied); the heads smaller, with the ligules in the dried specimens purplish underneath. Mature achenia unknown: ovaries with no manifest border or crown at the summit. Pappus as in the preceding.

6. *M. tenuifolia:* suffruticose, glabrous; stem erect, branching (2–3 feet high); leaves sessile, laciniate-pinnatifid, with long and narrowly linear lobes; the upper entire, filiform; heads few, corymbose. *Nutt.*—Leucoseris tenuifolia, *Nutt. l. c.*

St. Barbara, California, on the mountains near the town.—The expanded flowers and fruit not seen. Involucre as in M. saxatilis, but the scales narrower and more acuminate. *Nuttall.*

192. CREPIS. *Linn.* (excl. spec.); *Mœnch; DC. fl. Fr., & prodr. l. c.*

Heads several–many-flowered. Involucre mostly double; the inner or proper scales in a single series; the outer short and calyculate. Receptacle somewhat fimbrillate-hairy, or naked. Achenia terete or slightly compressed, mostly 10–30-striate, either columnar, narrowed at the apex, or obscurely attenuate-rostrate. Pappus copious, capillary, white; the bristles somewhat scabrous, usually very soft and slender (in H. chondrilloides, hyoseridifolia, pygmæa, &c., rather rigid and slightly thickened towards the base!).—Branching herbs (natives of the northern hemisphere), with nearly the involucre of Senecio. Leaves mostly toothed or pinnatifid. Flowers yellow.

§ 1. *Involucre many-flowered; the exterior calyculate scales often loose: receptacle naked or somewhat hairy: achenia mostly* 10–13-*striate.*—EUCREPIS, DC. (Crepidium & Psilochæna, *Nutt.*)

1. *C. runcinata:* perennial? radical leaves obovate-oblong or oblong-lanceolate, narrowed at the base and somewhat petioled, hirsute-pubescent on both sides, or at length glabrous, runcinate-toothed or somewhat incised, or frequently entire on the same plant; the cauline solitary or reduced to mere linear bracts at the bifurcations of the corymbosely branched scape; scales of the pubescent involucre linear-lanceolate, acute, with scarious margins; achenia somewhat attenuated upwards, smooth, scarcely as long as the pappus.—Hieracium runcinatum, *James, in Long's exped.* 1. *p.* 453; *Torr. in ann. lyc. New York,* 2. *p.* 209. Crepis biennis *β. Hook.! fl. Bor.-Am.* 1. *p.* 297, not of *Linn.* C. biennis *β.?* Americana, *DC. prodr.* 7. *p.* 163. Crepidium runcinatum, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 436.

Saskatchawan, to the prairies of the Rocky Mountains, *Drummond!* Lake Huron, *Dr. Todd.* Borders of woods at Devil's Lake, *Mr. Nicollet!*

Grassy plains of the Platte, *Nuttall.*—Scape 1–2 feet high, 2–4 times dichotomous. Heads fastigiate, resembling those of C. biennis; from which this species is distinguished by its mostly naked and slightly pubescent scape, narrower and less scarious scales of the involucre, &c., as well as the much more entire leaves. Some states seem to approach the following species, so as only to be distinguished by the larger heads, and more or less pubescent involucre.

2. *C. glauca:* perennial, glabrous and glaucous throughout; leaves all radical, thickish, spatulate-oblong, or nearly lanceolate, mucronate or somewhat acuminate, tapering to the base, unequally runcinate-toothed or runcinate-pinnatifid, or some of the leaves entire; scape naked, twice or thrice dichotomous, with minute bracts at the divisions; scales of the proper involucre about 12, linear; the calyculate scales minute; achenia obscurely angled, smooth, slightly attenuated towards the apex, as long as the pappus.—Crepidium glaucum, *Nutt.! in trans. Amer. phil. soc. l. c.*

β. caulescens: not glaucous [?]; stem with a cauline leaf at the first division.—Crepidium caulescens, *Nutt. l. c.*

Plains of the Upper Platte, *Nuttall! Lieut. Fremont!* July–Aug.—Scapes about a foot high. Heads much smaller than in C. runcinata, about 30-flowered. Leaves 3–6 inches long, tapering into an indistinct or winged petiole. Achenia strongly striate-ribbed, smooth.

3. *C. occidentalis* (Nutt.): perennial? dwarf, canescent with a close furfuraceous pubescence; cauline leaves few, sessile, pinnately parted, with the linear or lanceolate lobes often somewhat toothed; the radical lanceolate, acute, runcinate-pinnatifid, tapering into a petiole; the short lobes toothed; heads (few) paniculate-corymbose; proper scales of the cylindrical involucre 8–10, linear-lanceolate, canescent, and sparsely hispid with blackish hairs intermixed; the calyculate scales few and very short; achenia fusiform, not angled or striate, as long as the pappus.—*Nutt.! in jour. acad. Philad.* 7. *p.* 29. Psilochæna occidentalis, *Nutt.! in trans. Amer. phil. soc. l. c.*

On the Oregon, near the Rocky Mountains, *Mr. Wyeth!* Plains of the Platte, *Nuttall!*—A span high. Heads as large as in C. runcinata, about 20-flowered. Achenia probably all fertile, tapering to the apex, not rostrate. Pappus grayish-white.

§ 2. *Involucre few-flowered, cylindrical; the exterior calyculate scales very short and appressed: receptacle naked: achenia slender,* 5–10-*striate.*—PHÆCASIUM, Cass., Reichenb. (Crepis § Leptotheca, *Nutt.*)

4. *C. nana* (Richards.): perennial, nearly acaulescent, depressed, very glabrous and glaucous; scapes numerous from the summit of the somewhat fusiform caudex, clustered, bearing one or more about 14-flowered heads, scarcely equalling the elliptical or roundish entire or sinuate-lyrate long-petioled leaves; achenia linear, narrowed at the apex, scarcely rostrate.—*Richards.! appx. Frankl. journ. ed.* 2. *p.* 92; *Hook.! appx. Parry's 2nd voy. p.* 397, *t.* 1, *& fl. Bor.-Am.* 1. *p.* 297. Hieracium, &c., *Gmel. fl. Sibir.* 2. *p.* 20, *t.* 7, *f.* 2 *&* 3. Prenanthes pygmæa, *Ledeb. in mem. acad. St. Petersb.* 5. *p.* 553. P. polymorpha, *Ledeb.! fl. Alt.* 4. *p.* 144. (*α. & β.*) Barkhausia nana, *DC.! prodr.* 7. *p.* 156.

From the Arctic coast and islands! to lat 64°, and on the northern Rocky Mountains! (Also in Arctic Siberia!)—Scapes and leaves an inch or two in height; the lamina of the inner leaves often oblong-linear. Corolla yellow, turning purplish in drying. Achenia all uniform, or the central perhaps a little longer than the marginal, 10-striate, a little constricted at the apex, and then dilated into a disk that bears the pappus; certainly none of them rostrate as in Barkhausia!

5. *C. elegans* (Hook.): perennial, very glabrous and glaucous; stems numerous from the same fusiform root, slender, paniculate, bearing numerous (small) 10–14-flowered heads; radical leaves oval or spatulate, petioled, nearly or quite entire; the cauline narrowly spatulate; the upper linear, sessile.—*Hook.! fl. Bor.-Am.* 1. *p.* 297; *DC.! prodr.* 7. *p.* 172. Barkhausia elegans, *Nutt. in trans. Amer. phil. soc. l. c. p.* 435.
On the Assiniboin River, *Drummond!*—Plant 6 inches high; with rather smaller heads than the preceding; the young achenia similar to those of that species, and not more rostrate.

6. *C. acuminata* (Nutt.): perennial; stem nearly glabrous, sparingly leafy, bearing numerous 8–10-flowered heads in a naked and fastigiate compound corymb; leaves pubescent, lanceolate; the radical runcinate-pinnatifid, tapering at the base into a petiole, and at the apex into a slender entire acumination; the cauline few and sessile; the uppermost narrowly linear, entire; calyculate involucral scales villous-pubescent when young.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 437.
Plains of the Platte, *Nuttall!*—Root long and fusiform. Scapiform stem a foot high. Radical leaves 4–5 inches long. Heads more slender than in C. nana; the young achenia, pappus, &c. similar.

193. TROXIMON. *Nutt. in Fras. cat.* 1813, *& gen.* 2. *p.* 127; not of *Gærtn.*

Agoseris, *Raf.* (excl. char.)—Ammogeton, *Schrad.*

Head many-flowered. Scales of the campanulate involucre ovate-lanceolate, acute or acuminate (distinct or nearly so), membranaceous, somewhat loosely imbricated in 2–3 series; the exterior sometimes shorter. Receptacle subalveolate, rarely with a few chaffy scales intermixed among the flowers! Achenia glabrous, oblong-linear, somewhat obcompressed, 10-ribbed, with a large basilar callus, more or less narrowed at the apex, but scarcely if at all rostrate. Pappus longer than the achenium, consisting of copious and unequal rather rigid white bristles, in several series, scarcely scabrous, the stronger ones gradually thickened towards the base, and frequently more or less flattened.—Perennial acaulescent herbs, with the aspect of Scorzonera (natives of the Upper Mississippi and Missouri, the interior of Oregon, Saskatchawan, &c.,); the naked simple scapes terminated by a large head. Root fusiform or thickened. Leaves linear or lanceolate, elongated, entire, denticulate, or rarely runcinate-pinnatifid. Flowers showy, yellow, sometimes changing to purple or rose-color when old or in drying.

We find a gradual transition from the typical species of Troximon to Macrorhynchus, to which genus this bears nearly the same relation that Crepis does to Barkhausia. Even the nature of the pappus fails to furnish a very marked distinction, although in Troximon it is more or less rigid. Indeed, were the genus founded on T. cuspidatum alone, it would inevitably be referred to the subtribe Scorzonereæ; for all the bristles of the pappus in that species are somewhat flattened and wider towards the base; the inner and stronger ones so much so that they should rather be termed *paleæ* than bristles. But this character is much less evident in the nearly allied T. glaucum; and in the other species the bristles are capillary, although rather stiff. The remaining Troximon of Gærtner proving a Scorzonera, the name should certainly be kept for the present genus.

1. *T. cuspidatum* (Pursh): somewhat tomentulose when young; leaves narrowly linear-lanceolate, attenuate-acuminate, somewhat nerved, especially

on the broad midrib; the often undulate margins tomentose; scales of the involucre somewhat scarious, lanceolate, cuspidate-acute, glabrous, in two nearly equal series, erect; bristles of the pappus very numerous, rigid; the inner and stronger series evidently flattened and dilated towards the base!—*Pursh, fl.* 2. *p.* 742. T. marginatum, *Nutt.! gen.* 2. *p.* 128, *& in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 433.

Plains of the Upper Missouri and Platte to the Rocky Mountains, *Bradbury! Nuttall! Mr. Nicollet!* Eagle Prairie, Wisconsin, *Mr. Lapham!* April–June.—Heads, &c., apparently rather smaller than in the following. Achenia manifestly obcompressed, obtusely ribbed, a little narrowed at the summit, but not at all rostrate, much shorter than the setose pappus.

2. *T. glaucum* (Nutt.): somewhat glaucous; leaves linear-lanceolate, acute, entire, or rarely with one or two small teeth (the broad midrib somewhat nervulate towards the base), and with the scape nearly glabrous; scales of the involucre loosely imbricated in 3–4 series, somewhat unequal; the exterior (green) ovate-lanceolate and more or less pubescent when young; bristles of the pappus capillary, rigid.—*Nutt.! in Fras. cat.* (1813), *& gen.* 2. *p.* 128; *Pursh, fl.* 2. *p.* 495 *&* 505; *Sims, bot. mag. t.* 1667; *Hook.! fl. Bor.-Am.* 1. *p.* 300. (var. β.)

β. *dasycephalum:* involucre woolly at least when young, the exterior scales spreading; leaves and scape often somewhat pubescent; receptacle sometimes, but not always, furnished with a few linear-acuminate chaffy scales intermixed among the flowers!—T. glaucum, *Richards.! app. Frankl. journ. ed.* 2. *p.* 29; *DC. prodr.* 7. *p.* 252. T. glaucum, α. *Hook.! fl. Bor.-Am.* 1. *p.* 300; *& bot. mag. t.* 3462. T. pumilum, *Nutt. in trans. Amer. phil. soc. l. c.?* Ammogeton scorzoneræfolium, *Schrad.! ind. sem. Gœtt.* 1833; *DC.! prodr.* 7. *p.* 98.

Grassy plains of the Upper Missouri, *Bradbury, Nuttall! Dr. James!* and Big Sioux River, *Mr. Nicollet!* to Saskatchawan, *Drummond!* β. Saskatchawan and prairies of the Rocky Mountains to the Arctic coast, *Drummond! Richardson!* July–Aug.—Scape 6–12 inches high. Leaves 6–8 inches long, 4–10 lines wide. Heads nearly an inch in diameter. Tube of the bright yellow corolla beset with long jointed hairs near the summit. Achenia abruptly narrowed at the apex, obcompressed, at least when young.—It is remarkable that the chaff on the receptacle of the var. β. is found in some but not all of the wild specimens we have examined.

3. *T. parviflorum* (Nutt.): glabrous, or somewhat villous-pubescent when young; leaves narrowly lanceolate-linear, acute or acuminate, entire, sometimes retrorsely denticulate towards the base; scales of the glabrous involucre ovate-lanceolate, acuminate, few, in 2–3 series; the outer bracteolate, scarcely half the length of the inner; pappus capillary, rigid.—*Nutt.! in trans. Amer. phil. soc. l. c.*

Plains of the Platte to the Rocky Mountains, *Nuttall! Lieut. Fremont!*—Scape 4–5 inches high, mostly longer than the leaves: the latter about 2 lines wide. Head very much smaller and narrower than in the preceding; the flowers and involucral scales much fewer. Flowers yellow, sometimes changing to rose-color in drying.

4. *T. roseum* (Nutt.): leaves runcinate-pinnatifid, with short linear lobes, and with the scape sparsely villous-pubescent when young; scales of the glabrous involucre lanceolate, acuminate, few, in 2–3 series, the exterior short; pappus copious, capillary, rigid (flowers rose-color).—*Nutt.! in trans. Amer. phil. soc. l. c.*

Plains of the Platte, with the preceding, "which it wholly resembles, except the leaves and red [rose-color in spec. char.] flowers," *Nuttall!*—Achenia with 10 sharp ribs, rather shorter than the pappus, narrowed at the apex into a somewhat distinct beak.—Probably not sufficiently distinct from the foregoing.

‡ *Uncertain species.*

5. *T. taraxacifolium* (Nutt.): somewhat hirsute; leaves lanceolate or oval-lanceolate, scarcely acute, incisely runcinate-toothed at the base; scales of the involucre in about 2 series, the inner linear; achenia 'rostrately attenuated.' *Nutt. in trans. Amer. phil. soc. l. c.*

Plains of the Wahlamet, Oregon.—Remarkable for its broad leaves, which are an inch and a quarter wide, by six inches in length, most pubescent on the midrib. Scape rather short. Pappus very long and coarse, minutely scabrous. *Nuttall.*

T. odoratum, *Raf.*, and the other fictitious species of the Flora Ludoviciana, it would be quite useless to attempt to identify.

194. MACRORHYNCHUS. *Less. syn. p.* 139; *Fisch. & Meyer, ind. sem. St. Petersb.* 1835.; *DC. prodr.* 7. *p.* 145.

Macrorhynchium, *Reichenb.*—Trochoseris, *Pœpp. & Endl.*

Head many-flowered. Scales of the campanulate involucre imbricated in few series, lanceolate; the exterior often foliaceous, sometimes calyculate. Receptacle naked. Achenia mostly terete, or slightly obcompressed, linear or fusiform, about 10-ribbed or grooved, the ribs callous, corky, or alate, the apex at length produced into a long and slender or filiform beak. Pappus shorter than the achenium, consisting of copious uniform soft and white capillary bristles, minutely scabrous, often caducous.—Annual or perennial acaulescent or subcaulescent (American, chiefly Western,) herbs, with nearly the habit of Troximon. Leaves entire or laciniate-pinnatifid. Scapes simple, with solitary heads. Flowers yellow.

§ 1. *Perennial: ligules elongated: achenia fusiform,* 10-*ribbed or* 10-*nerved, glabrous* (*the outer series sometimes infertile,* ex *Nutt.*)*; the ribs uniform, not winged or produced.*—STYLOPAPPUS, Nutt.

* *Scales of the campanulate involucre consimilar, in few series; the exterior often squarrose-spreading or calyculate.* (Stylopappus § Troximeria, *Nutt.*)

1. *M. troximoides:* glabrous, at least when old, acaulescent; leaves oblanceolate, mostly obtuse and entire (rarely with one or two small salient teeth), tapering into slender margined petioles; scales of the involucre lanceolate, appressed, in about 2 somewhat equal series, the exterior rather broader, woolly pubescent when young, as well as the summit of the elongated scape; achenia fusiform-linear, strongly and closely 10-sulcate, gradually attenuated into a beak which is nearly as long as the deciduous pappus, but shorter than the proper body of the achenium.—Troximon aurantiacum, *Hook.! fl. Bor.-Am.* 1. *p.* 300, *t.* 104; *DC. prodr.* 7. *p.* 252. T. pumilum, *Nutt.! in trans. Amer. phil. soc. l. c.?*

Alpine prairies of the Rocky Mountains, *Drummond!* On the Wind River Chain at the elevation of 7000 feet and more, *Lieut. Fremont!* Mount Ranier, Oregon, *Mr. Tolmie!*—Scape a span to a foot high. Corolla orange-color.—We have described the fruit from the single specimen collected by Lieut. Fremont; which alone exhibits it fully developed. The slender terete achenium, with the beak, is nearly three-fourths of an inch long; and the apex, as in other species, is abruptly dilated into a flat disk for the insertion of the pappus, which is quite fugacious. In no case do we find the involucral scales united as in Hooker's figure.—This is possibly the Macrorhynchus aurantiacus, *Fisch. & Meyer;* a species of unknown origin: but it does not sufficiently accord with the brief character given by De Candolle.

2. *M. laciniatus:* nearly glabrous, at least when old, acaulescent; leaves narrowly linear, sparingly laciniate-toothed towards the base, or subpinnatifid; the lobes (1–3 on each side) linear, slender; scales of the involucre lanceolate, acute, imbricated in 3–4 series; the outer shorter and somewhat spreading, woolly-pubescent when young, as well as the summit of the scape; "stipe more than twice the length of the achenium."—Stylopappus (Troximeria) laciniatus, *Nutt.! in trans. Amer. phil. soc. l. c.*

β. longifolius: leaves more pubescent, deeply divided, slender; exterior scales of the involucre nearly equalling the inner, foliaceous, spreading.—Stylopappus laciniatus *β.* longifolius, *Nutt.! l. c.*

Plains of the Wahlamet, Oregon, *Nuttall!* Oregon, *Dr. Scouler!* (var. *β.*)—Plant 6–12 or 20 inches high. Heads nearly as large as in M. troximoides. Flowers pale yellow.

3. *M. elatus:* at length nearly glabrous, acaulescent; leaves sparingly and unequally pinnatifid, glaucous; the lobes and rachis narrowly linear-lanceolate; scape woolly when young; scales of the involucre hirsute, lanceolate, imbricated in 3 or 4 series, the exterior shorter; stipe rather longer than the slender achenium (marginal infertile? achenia minutely pubescent.)—Stylopappus (Troximeria) elatus, *Nutt.! in trans. Amer. phil. soc. l. c.*

On the Wahlamet, with the preceding, *Nuttall!*—Scape 1–2 feet high; sometimes with a single small leaf. Stipe of the achenium filiform.—Nearly allied to M. laciniatus.

4. *M. Lessingii* (Hook. & Arn.): root perennial; stem scapiform, glabrous; leaves glabrous, narrowly linear, pinnatifid, with segments short and remote (leaves either entire, toothed, or subpinnatifid, obtuse, elongated obovate, *DC.*); scales of the involucre rather obtuse, with scarious margins, somewhat hirsute; achenia fusiform, deeply 10-striate-sulcate, the ribs obtuse and not winged, one-third the length of the filiform beak (those of the outer and inner flowers similar); pappus soft, caducous. *Hook. & Arn. bot. Beechey, suppl. p.* 361. Borkhausia Lessingii, *Hook. & Arn. l. c. p.* 145. Troximon apargioides, *Less. in Linnæa,* 6. *p.* 501; *DC. prodr.* 7. *p.* 252.

California, *Chamisso, Capt. Beechey, Douglas.*—This plant is unknown to us. Lessing says it has the aspect of Krigia Virginica, or a state of Leontodon autumnale with a single head.

* * *Scales of the hemispherical involucre dissimilar; the exterior short, foliaceous, denticulate, squarrose-spreading.*

5. *M. grandiflorus:* pubescent or at length glabrous, acaulescent; leaves lanceolate, lyrately pinnatifid, tapering into long petioles; the terminal lobe large and oblong-lanceolate; scape stout, fistulous, striate, woolly at the base; exterior scales of the involucre ovate, obtuse, rather rigid, in 2–3 series, about half the length of the inner, which are narrowly lanceolate-linear, acute, somewhat scarious, as long as the pappus; achenia linear-oblong, acute at each end, 10-striate, about one-third the length of the setiform beak; pappus very soft and slender.—Stylopappus grandiflorus, *Nutt.! l. c.*

High plains of the Wahlamet, *Nuttall!*—Scape a foot high. Head larger than that of the Dandelion; only seen in fruit. Achenia very small for the size of the head, 2–3 lines long (the exterior abortive, *Nutt.*); the capillary stipe twice the length of the very white pappus.

§ 2. *Annual: ligules elongated: achenia linear-oblong, glabrous, obtuse; the outer series inflated and scarcely striate; the others compressed* [*obcompressed?*], *with* 10 *acute narrowly winged ribs: scales of the involucre imbricated in few series, the exterior shorter and calyculate.*—CRYPTOPLEURA, Nutt.

6. *M. Californicus:* dwarf (3–4 inches high), subcaulescent, hirsute: leaves linear-lanceolate, incisely serrate; scales of the involucre in about 3 series; the outer ovate, acute, hirsute; the inner lanceolate; achenia about half the length of the filiform beak.—Cryptopleura Californica, *Nutt. in trans. Amer. phil. soc. l. c. p.* 431.

Near St. Barbara, California, *Nuttall.*—The achenia are said to be yellowish-white: the pappus very soft and white. We have not seen the plant, and have derived the character wholly from Nuttall's description.

§ 3. *Annual: ligules scarcely exserted: achenia* (*glabrous or nearly so*) *with the ribs callous-corky or winged: scales of the involucre in few series, appressed, or the exterior foliaceous and squarrose-spreading.*—MACRORHYNCHUS, Less., Fisch. & Meyer. (Trochoseris, *Pœpp. & Endl.* Kymapleura, *Nutt.*)

7. *M. hetrophyllus* (Nutt.): dwarf, subcaulescent, villous-pubescent when young; primary leaves oblanccolate or spatulate, mostly entire; the others sparingly pinnatifid, with 2–3 short linear lobes on each side; the terminal lobe elongated, oblong-linear; scape scarcely longer than the leaves; scales of the involucre lanceolate, appressed, in 2 series; the outer rather shorter and somewhat pubescent; achenia with slightly undulated wings, about one-third the length of the filiform beak.—M. (Kymapleura) heterophyllus, *Nutt.! mss.*, *& trans. Amer. phil. soc. l. c. p.* 430. Kymapleura heterophylla, *Nutt. l. c.* (in errata.)

Plains of Oregon, *Nuttall!*—Plant 4–5 inches high, slender. Head small. Corolla pale yellow, purplish externally, fugacious.—This species appears to resemble M. Pœppigii. We do not observe any marked difference between the outer and inner achenia, or that either are at all compressed, or more than obscurely pubescent, and that only when quite young.

195. TARAXACUM. *Haller, enum. Helv.* (excl. spec.); *Juss.; DC. l. c.*

Head many-flowered. Involucre double; the exterior of small scales, either appressed, spreading, or reflexed; those of the inner erect, in a single series; all often callous-corniculate at the apex. Receptacle naked. Achenia oblong, striate-ribbed or angled, muricate on the ribs, the apex abruptly produced into a long beak. Pappus of copious white capillary bristles.—Acaulescent perennial herbs, with simple fistulous and naked scapes bearing a rather large head; the leaves all radical, oblong, or lanceolate, either nearly entire, sinuate-toothed, or runcinate. Flowers yellow.—*Dandelion.*

* *Exterior involucral scales spreading or squarrose.*

1. *T. Dens-leonis* (Desf.): at length glabrous; leaves unequally and acutely runcinate, the lobes toothed anteriorly; scales of the involucre not corniculate, the exterior reflexed; achenia muricate at the summit.—*DC.! prodr.* 7. *p.* 145. T. officinale, *Vill.; Koch, syn. fl. Germ. & Helv. p.* 428, var. *α.* Leontodon Taraxacum, *Linn.; Engl. bot. t.* 510; *Pursh, fl.* 2. *p.* 497; *Ell. sk.* 2. *p.* 250; *Hook.! fl. Bor.-Am.* 1. *p.* 296; *Darlingt.! fl. Cest. p.* 443.

Pastures, &c., naturalized nearly throughout the United States! Probably native in the Northern States, and throughout British America on both sides of the Rocky Mountains. *Hook.* April–Sept.—"When the heads of flowers first expand, the pappus is nearly sessile; as soon as the florets shrivel, the inner series of the involucre closes for a short time, in a cylindrical form; the beak of the achenia then becomes suddenly elongated, the whole involucre is reflexed, and the elevated pappus displayed in a globular head." *Darlingt.*—The following species (the characters of which we copy from chiefly De Candolle, who keeps them distinct), as well as nearly all the genuine Taraxaca, are not improbably correctly viewed by Fries, Koch, and other excellent botanists, as mere varieties of this, the *Common Dandelion.*

2. *T. latilobum* (DC.): leaves runcinate, glabrous above, sparsely hairy (especially on the midrib) beneath; the lobes broadly triangular, toothed anteriorly, crowded; scape glabrous; scales of the involucre not corniculate; the exterior reflexed-spreading; achenia muricate throughout. *DC.! l. c.*

Newfoundland, *Pylaie!*—Very [too] near T. Dens-leonis. *DC.*

3. *T. ceratophorum* (DC.): leaves glabrous, sinuate-toothed or runcinate; scapes glabrous, when young tomentose at the apex; scales of the involucre all erect, furnished with a callous horn below the apex; achenia mucronate at the apex, as long as the beak. *DC. l. c.*—Leontodon ceratophorum, *Ledeb. fl. Alt.* 4. *p.* 149, & *ic. pl. Ross.-Alt.* 1. *t.* 34.

Unalaschka (and Kamtschatka).—Lobes of the leaves various in size; the larger triangulate. Head twice as large as that of T. Dens-leonis. *DC.*

* * *Exterior involucral scales appressed.*

4. *T. palustre* (DC.): glabrous; leaves lanceolate, sinuate or somewhat runcinate, as long as the scape; scales of the involucre not corniculate; the exterior lanceolate, acute; achenia spinellose-muricate at the apex, one-half or one-third the length of the beak. *DC.! fl. Fr., & prodr. l. c.*—Leontodon palustre, *Smith, fl. Brit.* 2. *p.* 823; *Engl. bot. t.* 553; *Hook.! fl. Bor.-Am.* 1. *p.* 296. L. Taraxacum *β.* salinum, *E. Meyer, pl. Labrad. p.* 58. Taraxacum montanum, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 430, not of *DC.*

British America! From Labrador and Hudson's Bay to the Pacific. Also among the Rocky Mountains, in somewhat saline situations on the Platte, and in the highest vallies of the Colorado of the West. *Nuttall!*—Varies greatly as to the shape and toothing of the leaves.

5. *T. hirsutum* (Hook.): hirsute throughout; leaves pinnatifid; the unequal lobes acuminate, remote; scales of the involucre erect, appressed, clothed with fulvous hairs. *Hook.! fl. Bor.-Am.* 1. *p.* 296 (under Leontodon); *DC. l. c. p.* 149.

Menzies' Island, and sandy banks of the Oregon, *Douglas, Dr. Scouler.*

196. PYRRHOPAPPUS. *DC. prodr.* 7. *p.* 144.

Heads many-flowered. Involucre double; the exterior of numerous linear-subulate mostly loose and spreading scales; the interior of numerous erect linear scales, in a single series, often somewhat corniculate near the apex, their margins usually more or less united. Receptacle flat, naked. Achenia oblong, somewhat terete, 5-sulcate, minutely scabrous, muricate, or rugulose; the apex at length produced into a long beak. Pappus of copious and very soft capillary (scarcely scabrous) bristles, either reddish or fulvous.—Perennial? or perhaps mostly annual or biennial nearly glabrous herbs (natives of the Southern United States and Mexico, except a doubtful Cape species); with oblong or lanceolate often pinnatifid or laciniate leaves; the simple or branching stems naked at the summit and bearing rather large heads. Flowers deep yellow.

1. *P. Carolinianus* (DC.! l. c.): stem simple or mostly branched above; earliest radical leaves lanceolate-oblong, obtuse, sinuate-toothed or nearly entire; the others lanceolate, acute, mostly laciniate or pinnatifid; scales of the inner involucre somewhat corniculate near the apex, slightly caulescent, like the apex of the peduncle, with a minute furfuraceous pubescence; achenia minutely rugulose transversely when mature, much shorter than the filiform beak, which is furnished with a villous ring immediately at the base of the fulvous or at length reddish pappus.—*Nutt.! in trans. Amer. phil. soc. l. c. p.* 430 (*β.* maximus). Leontodon Carolinianum, *Walt. Car. p.* 192. Scorzonera pinnatifida, *Michx.! fl.* 2. *p.* 89. Chondrilla lævigata, *Pursh, fl.* 2. *p.* 497. Borkhausia Caroliniana, *Nutt. gen.* 2. *p.* 126; *Ell.! sk.* 2. *p.* 251; *Hook.! in compan. to bot. mag.* 1. *p.* 100. (*α.* & *β.*)

Fields, &c., Maryland! and Virginia! to Louisiana! and Arkansas! common. March–July.—① or ♃? Stem often scapiform, with only one or two partly clasping leaves, sometimes a little pubescent at the base. Flowers showy.—De Candolle, describing from immature specimens, states that the achenium has a short beak; but when mature it is remarkably long, as described by Elliott.

2. *P. grandiflorus* (Nutt.): scape simple, naked, much longer than the deeply pinnatifid and ciliate radical leaves, bearing a single head; involucre slightly canescent; pappus fulvous, furnished with a villous ring at the base. —*Nutt.! in trans. Amer. phil. soc. l. c.* P. scaposus, *DC. l. c.?* Borkhausia grandiflora, *Nutt.! in jour. acad. Philad.* 7. *p.* 69.

Borders of shaded ravines, &c., Arkansas, *Dr. Pitcher!* May.—Root slender, apparently annual. Earlier radical leaves runcinate-toothed or subpinnatifid; the succeeding larger (4–6 inches long) deeply pinnatifid, with the lobes linear-oblong, sparingly angulate-toothed, divaricate or spreading. Scape a foot high, with a single small bract in the middle. Head larger than in the preceding; the flowers golden yellow. Achenia not seen. Ovary with a short beak.

197. LACTUCA. *Tourn. inst. t.* 267; *Linn.*; *Gærtn. fr. t.* 158; *DC. l. c.*

Heads several–few-flowered. Scales of the cylindrical calyculate-imbricated involucre in 2–4 series; the exterior shorter. Receptacle naked.

Achenia obcompressed, flat, wingless, glabrous, abruptly produced into a filiform beak. Pappus of copious very soft and white capillary bristles in several series, fugacious.—Caulescent herbs (chiefly of the northern hemisphere); with entire or pinnatifid leaves, and paniculate heads. Flowers yellow, blue, purple, or white, often variable in the same species.

In all the following species, the heads are about 20-flowered; and the achenia brownish or blackish, very obscurely scabrous-rugulose, one-nerved in the middle of each face, and sometimes with two obsolete nerves towards the margin. Nuttall places them all in his GALATHENIUM; but we cannot comprehend how this portion of the proposed genus is to be distinguished from Lactuca, nor the remainder from Mulgedium; nor why the author did not refer to it his own Mulgedium pulchellum, which is exactly intermediate between Mulgedium and Lactuca.

1. *L. graminifolia* (Michx.): stem simple, virgate; leaves elongated, sessile; the cauline narrowly linear, acute, entire; the lowest and radical sparingly runcinate-pinnatifid or toothed in the middle, linear and elongated towards the base and apex; heads in a narrow loose and leafless panicle; achenia elliptical, rather longer than the beak; flowers purple, varying to white, or yellow!—*Michx.! fl.* 2. *p.* 85; *Ell. sk.* 2. *p.* 253; *Hook.! compan. to bot. mag.* 1. *p.* 100; *DC. prodr.* 7. *p.* 134. L. graminea, *Spreng. syst.* 3. *p.* 659. Galathenium graminifolium, *Nutt. in trans. Amer. phil. soc. l. c.* 7. *p.* 443. G. salicifolium, *Nutt.! l. c.* as to the spec. "Florida, *Ware,*" *in herb. acad. Philad.*

α. glabrous, or the midrib of the lower leaves often sparingly hirsute.

β. lower leaves and base of the stem hirsute.

Dry soil, South Carolina to Alabama! and Western Louisiana! April–Sept.—② or ♃ ? Stem 2–3 feet high, slender. Lower leaves 6–10 inches long, 3–6 lines wide; the radical usually with one or 2 pairs of runcinate lobes.

2. *L. elongata* (Muhl.): stem tall and stout, simple or paniculate at the summit; leaves partly clasping, pale beneath, the upper usually lanceolate and entire; the lower runcinate-pinnatifid; heads in an elongated leafless panicle; achenia oval, rather longer than the beak; flowers light yellow, varying to purple.

α. longifolia: glabrous or nearly so; upper leaves elongated lanceolate and often entire; the lower runcinate-pinnatifid, with the lobes lanceolate, acute or acuminate, entire or slightly repand-toothed; the terminal lobe elongated; flowers mostly light yellow.—L. longifolia, *Michx.! fl.* 2. *p.* 85. L. elongata, *Muhl. in Willd. spec.* 3. *p.* 1523; *Pursh, fl.* 2. *p.* 500; *Ell.! sk.* 2. *p.* 252; *Hook.! fl. Bor.-Am.* 1. *p.* 296; *Darlingt.! fl. Cest. p.* 442; *DC.! prodr.* 7. *p.* 137. L. Caroliniana, *Walt. Car. p.* 193? Galathenium elongatum, *Nutt.! l. c.*

β. integrifolia: glabrous; leaves all or nearly all undivided, lanceolate, acute or acuminate, entire or repand-denticulate; the lowest occasionally pinnatifid; flowers light yellow, ochroleucous, tinged with purple, or bluish-purple.—L. integrifolia, *Bigel.! fl. Bost. ed.* 2. *p.* 287; *DC. prodr.* 7. *p.* 137, not of *Nutt.* L. sagittifolia, *Ell.! sk.* 2. *p.* 253; *DC. l. c.* Galathenium integrifolium, *Nutt. l. c.* G. salicifolium, *Nutt.! l. c.*, as to Pennsyl. specim. herb. Schweinitz.

γ. sanguinea: smaller; leaves all or nearly all runcinate; mostly hirsute-pubescent (as well as the stem) either throughout or on the midrib beneath; the lobes usually shorter and broader, irregularly toothed, the terminal one not prolonged; flowers yellow-purple (*Muhl. mss.*), dark-red with a yellowish centre (*Oakes, mss.*), saffron-color, or purple (branches and involucre often purplish).—L. hirsuta, *Muhl. cat.*; *Nutt. gen.* 2. *p.* 124.

L. villosa, *Muhl. fl. Lancastr. ined.* L. sanguinea, *Bigel.! fl. Bost. ed.* 2. *p.* 134; *DC. l. c.* Galathenium sanguineum, *Nutt.! in trans. Amer. phil. soc. l. c.* G. Floridanum, *Nutt.! l. c.*, fide *herb. acad. Philad.*

ε. *albiflora:* glabrous, "flowers white"; otherwise as in var. γ.

Rich damp soils, fields and borders of thickets, Canada! and Saskatchawan! to Georgia! and Louisiana! γ. Massachusetts! and Upper Mississippi! to Louisiana! and Texas! In more exposed places and sterile soil. δ. Western Louisiana, *Dr. Hale!* July–Aug.—②? Stem 2–8 feet high, hollow. Leaves mostly large, very variable; all the above varieties passing into each other.—*Wild Lettuce. Fire-weed.*

‡ *Doubtful species.*

3. *L. Ludoviciana* (DC. l. c.): very smooth (3–5 feet high); leaves all runcinate, retrorsely and sharply toothed; the cauline partly clasping; panicle divaricate, the peduncles and involucre naked; pappus conspicuously stipitate; flowers yellow, *Nutt.*—Sonchus Ludovicianus, *Nutt. gen.* 2. *p.* 125. Galathenium Ludovicianum, *Nutt. in trans. Amer. phil. soc.*, as to syn.

Moist places in the open plains around Fort Mandan on the Missouri, *Nuttall.* June.—This is entirely unknown to us. May it not be a state of the polymorphous Lactuca elongata? But a specimen in the herbarium of the Academy of Natural Sciences at Philadelphia (New Orleans, *Mr. Trudeau!*) ticketed by Mr. Nuttall 'Mulgedium Ludovicianum', is M. Floridanum, wanting the lower leaves.

L. Canadensis (Linn. l. c.), as to the description, and especially as regards the syn. "L. Canadensis altissima angustifolia, flore pallide luteo." *Tourn. inst. p.* 474, (which is perhaps the foundation of the species) probably relates to the common Lactuca elongata; to which, indeed, the very imperfect specimen in the Linnæan herbarium may belong, although it is marked by Smith as a Sonchus.

198. MULGEDIUM. *Cass. dict.* 33 (1824), *p.* 296; *Less. syn. p.* 142; *DC.*

Agathyrsus, *Don* (1829).

Heads many-flowered. Involucre calyculate-imbricated; that is, with the exterior scales much shorter than the others and more or less imbricated. Receptacle naked, foveolate. Achenia glabrous, compressed, striate with a few nerves or ribs on each side, the summit contracted into a more or less evident thickish beak of the same texture with the body of the achenium, which is expanded at the apex into a ciliate disk. Pappus of copious somewhat scabrous capillary bristles in one or more series, rather soft and deciduous, either bright white or tawny.—Caulescent herbs (mostly of the northern hemisphere); with pinnatifid or undivided leaves, and racemose or usually paniculate heads. Flowers blue, rarely dull bluish-white or ochroleucous.

§ 1. *Pappus bright white: corolla blue or purple.*—EUMULGEDIUM, DC.

* *Achenia tapering into a slender beak: involucre imbricated.*

1. *M. pulchellum* (Nutt.): glabrous, pale or glaucescent; stem simple or sparingly branched; leaves oblong-lanceolate or linear, sessile, mucronate, entire, or lower runcinate-pinnatifid; heads several, racemose-corymbose; the erect peduncles furnished with subulate scale-like bracteoles; scales of

the conoid-cylindraceous involucre lanceolate, imbricated in 3–4 series; achenia minutely scabrous, lanceolate-oblong, tapering into a conspicuous beak.—M. pulchellum & M. heterophyllum, *Nutt.! in trans. Amer. phil. soc.* (*n. ser.*) 7. *p.* 441. Sonchus pulchellus, *Pursh! fl.* 2. *p.* 502. S. Sibiricus, *Richards.! appx. Frankl. journ. ed.* 2. *p.* 30; *Hook.! fl. Bor.-Am.* 1. *p.* 293; not of *Linn.* (at least as to the Siberian plant.) Lactuca integrifolia, *Nutt.! gen.* 2. *p.* 124, not of *Bigel.* (L. oblongifolia, *Nutt.! in Fras. cat.*) L. pulchella, *DC. prodr.* 7. *p.* 134.

α. leaves entire, or the lower occasionally 1–2-toothed towards the base, varying from lanceolate-oblong to narrowly linear.

β. lower and sometimes nearly all the cauline leaves runcinate-pinnatifid; the lobes oblong-lanceolate, entire.

Alluvial soil, &c., from the Upper Missouri and Platte, *Nuttall! Mr. Nicollet! Lieut. Fremont!* and Lake Huron (*Dr. Todd*), north to Fort Franklin, in lat. 66°, *Richardson! Drummond!* and west to the mouth of the Oregon, *Douglas! Mr. Tolmie! Nuttall!* July–Aug.—♃ A foot or more high, with pretty large heads (the involucre mostly tinged with purple), and showy bright blue flowers.—This plant, in some of its forms, has very much the aspect of M. Sibiricum; from which it is distinguished by the leaves being neither acuminate, nor dilated at the base (except the uppermost) or clasping, by the more imbricated involucre, and especially by the achenium, which tapers gradually into a prominent beak, the apex of which seldom presents the firm texture of the body of the fruit. The var. *β.* is also quite as nearly allied to M. Tartaricum; the achenium of which is unknown to us.

* * *Achenia with a short and thick or obscure beak: involucre calyculate-imbricated.*

2. *M. acuminatum* (DC.! l. c.): glabrous; stem paniculate at the summit; cauline leaves ovate or ovate-lanceolate, acuminate, denticulate or toothed, usually somewhat pubescent or hairy on the midrib and veiny beneath, contracted at the base into a winged petiole; the radical rarely sinuate or slightly runcinate; heads in a loose panicle, on short divaricate and somewhat bracteolate peduncles; involucre glabrous; achenia slightly rostrate.—Sonchus acuminatus, *Willd.! spec.* 3. *p.* 1521; *Pursh, fl.* 2. *p.* 502; *Ell.! sk.* 2. *p.* 255; *Torr.! compend. p.* 279; *Darlingt.! fl. Cest. p.* 446. S. Floridanus, *Michx.! fl.* 2. *p.* 85, in part. Lactuca villosa, *Jacq. hort. Schœnb.* 3. *t.* 367; *Beck. bot. p.* 170.

Borders of thickets, &c. New York! to Ohio! Kentucky! Georgia! and Alabama! Aug.–Sept.—② Stem 3–6 feet high, often purplish. Leaves 3–6 inches long, thin; the radical and sometimes the lower cauline truncate at the base. Flowers blue or purplish-blue. Heads small, nearly as in the following species; from which the undivided leaves chiefly distinguish it.

3. *M. Floridanum* (DC.! l. c.): glabrous; stem paniculate above; leaves lyrately or somewhat runcinately pinnately parted, with the segments sinuately or sharply toothed, the terminal usually triangular and acute or acuminate; the lower leaves petioled, often with small segments interposed; the uppermost sessile, lanceolate, sinuate-lobed or toothed; heads in a loose compound panicle, on divaricate slightly bracteolate peduncles; involucre glabrous; achenia with a short beak.—M. lyratum, *Cass. dict. l. c.* 33. *p.* 297. M. divaricatum, *Nutt. in trans. Amer. phil. soc. l. c. p.* 442. Chondrilla sylvestris alta, &c., *Clayt.! in Gronov. fl. Virg. p.* 115. Sonchus Floridanus, *Linn.! spec.* 2. *p.* 795; *Willd.! spec.* 3. *p.* 1520; *Michx.! fl.* 2. *p.* 85 (in part); *Pursh, fl.* 2. *p.* 501; *Ell. sk.* 2. *p.* 225. S. Lapponicus, *Willd. l. c.?* (excl. syn. & habitat.) S. biennis, *Mœnch.* S. leucophæus, *Hook.! compan. to bot. mag.* 1. *p.* 100. Lactuca Floridana, *Gærtn. fr. t.* 158. Agathyrsus Floridanus, *Beck, l. c.* (quoad syn.) Galathenium Floridanum, *Nutt. in trans. Amer. phil. soc. l. c.*

β. leaves somewhat sessile, or the upper cordate-clasping.—M. multiflorum, *DC. l. c.* Sonchus racemosus, *Lam. dict.*, ex *DC.* S. multiflorus, *Desf. cat. Par.* (1829). *p.* 145. Galathenium multiflorum, *Nutt. l. c.*

γ. achenia very obscurely rostrate; otherwise as in the ordinary plant.

δ. lower leaves with one or two narrow and often elongated lobes on each side; the terminal large and triangular-hastate, rarely hastately 3-lobed.

In rather rich soil, Southern and Western States! β. Mountains of the Southern States, *Rafinesque! Herb. Schweinitz! &c.* from Virginia! and Ohio! to Florida, Louisiana! and Texas! γ. Indiana, *Dr. Clapp!* δ. Ohio, *Mr. Lea!* North Carolina, *Mr. Curtis!* Tennessee, *Rafinesque!* July–Sept.— ♃ or ②? Stem 3–6 feet high; the summit and loose branches often purplish and a little glaucous. Lower leaves large, variable in form; the terminal lobe often smallest. Heads as large, or rather larger than in M. leucophæum. Involucre calyculate-imbricate, often tinged with purple. Flowers blue.

§ 2. *Pappus tawny: corolla light blue, or ochroleucous.*—AGALMA, DC.

4. *M. leucophæum* (DC.! l. c.): glabrous or nearly so; stem tall, very leafy, paniculate at the summit; leaves irregularly subruncinate-pinnatifid or pinnately parted, coarsely and unequally toothed, often sparsely ciliate and hairy on the veins beneath; the uppermost often undivided, lanceolate-acuminate; heads in an ample compound panicle; peduncles racemose, subulate-bracteolate; involucre glabrous; flowers bluish-white or ochroleucous, usually changing to a pale dirty blue; achenia slightly rostrate.—Sonchus alpinus, *Linn.! spec.*, as to spec. char. only; *Smith! ic. pl. rar. t.* 21. S. Canadensis, *Linn. l. c.*, as to the habitat (the whole char. and descr. relating to the European S. alpinus). S. spicatus, *Lam. dict.* 3. *p.* 401. S. leucophæus, *Willd.! spec.* 3. *p.* 1520 (excl. syn. *Walt.*); *Pursh, fl.* 2. *p.* 501; *Desf.! cat. Par.*; *Hook.! fl. Bor.-Am.* 1. *p.* 293. S. acuminatus, *Bigel. fl. Bost.* S. Floridanus, *Ait.! Kew.* 3. *p.* 116; *Darlingt.! fl. Cest. p.* 445. S. pallidus, (*Pursh?*) *Torr.! compend. p.* 279. Lactuca Canadensis, &c., flore leucophæo, *Tourn. inst. p.* 474. L. Canadensis, *Linn. spec.* 2. *p.* 796? Agathyrsus leucophæus, *Don*; *Beck, bot. p.* 170. Mulgedium (Leucomela) leucophæum, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 442.

β. *integrifolia:* leaves obovate-oblong or lanceolate, undivided, or the lower sparingly runcinate-pinnatifid, or incised.

Low grounds, &c., Saskatchawan! Newfoundland! Canada! Massachusetts! and throughout the Northern and Western States! to the mountains of Carolina! Also Oregon, *Dr. Scouler!* Aug.–Sept.— ② Plant 3–12 feet high. Lower leaves often a foot long; the upper sessile, and usually partly clasping. Heads small. Pappus dirty white or tawny-brownish.—To the synonyms of this well-marked plant, perhaps we should add that of Sonchus macrophyllus, of American writers.

‡ *Of uncertain origin.*

5. *M. macrophyllum* (DC.! l. c.): stem strict, hispid at the summit; leaves ample, cordate at the base, somewhat lyrate, hairy beneath, the terminal lobe very large and cordate; panicle loose, hispid; involucre sparingly hispid. *DC.*—Sonchus macrophyllus, *Willd.! spec.* 3. *p.* 1519. (excl. syn. *Gronov.*) "S. Canadensis, *Fræl. in Ust. ann.* 1. *p.* 29." S. cordifolius, *Desf. cat. Par.* (1804) *p.* 87.

"North America.—Root tuberous. Stem 4–7 feet high. Flowers blue, as large as in the common Succory." *Willd.*—This well-marked species was founded on specimens cultivated in the Berlin Botanic Garden; the origin of which is no-where recorded. We have seen nothing like it in this country, and are somewhat confident that it is not a native of North America. We have no conception what plant (if any) Pursh had in view, under this name, which is said to grow in shady low grounds, near springs, from Pennsylvania to Carolina."

M. alpinum, Less., should be excluded from the North American Flora; the real Sonchus alpinus, in fact, having never been found in Canada, nor the S. alpinus, *Smith*, *ic. pl. t.* 21, in Lapland or any part of Europe. The history of the confusion respecting S. alpinus and S. Canadensis produced by Linnæus, is evidently as follows. The specimens of the European S. alpinus and of a Canadian plant received from Kalm were transposed in the Linnæan herbarium; where the former (which was well described in the Lachesis Lapponica and the Hortus Cliffortianus long before the latter was known to botanists) is ticketed "S. Canadensis (K)," and the latter, (which is S. leucophæus, *Willd.*) "S. alpinus." Not perceiving this mistake, Linnæus, in the Species Plantarum, constructed the specific phrase of S. alpinus from the Canadian plant so ticketed in his herbarium (while all the synonymy and the habitat relate to the alpine European species); and at the same time gave an excellent description of the species he had himself collected in Lapland, under the name of S. Canadensis. Smith, on obtaining possession of the Linnæan herbarium, not duly considering Linnæus's description in the Hortus Cliffortianus, nor his detailed account of the Lapland plant in the then manuscript Lachesis Lapponica, incautiously figured the American specimen as the original Sonchus alpinus; and took the European species (which he afterwards named S. cæruleus) to be also a native of Canada. Hence, although the synonymy has long since been rectified, so far as relates to the European S. alpinus, that species also has ever since been erroneously viewed as an American plant.

199. SONCHUS. *Linn.* (excl. spec.); *Cass.; DC. prodr.* 7. *p.* 184.

Heads many-flowered, becoming tumid at the base. Involucre more or less imbricated. Receptacle naked. Achenia compressed, longitudinally ribbed or striate, not rostrate or attenuated at the apex. Pappus of copious very white exceedingly soft and fine capillary bristles, in several series.—Chiefly caulescent weed-like herbs (scarcely any of which are natives of this country); with undivided or pinnatifid leaves, and often corymbose or umbellate heads. Flowers yellow.

* *Annual herbs.*

1. *S. tenerrimus* (Linn.): stem erect, terete, glabrous, or with glandular hairs near the summit; leaves auriculate-clasping, variously 1–2-pinnately parted; the base of the involucre tomentose when young or at length naked; achenia narrow, nervulate, transversely tuberculate-rugose. *DC.*—*Linn. spec.* 2. *p.* 794; *Sibth. fl. Græc. t.* 790; *Boiss.! voy. bot. p.* 390. S. tenerrimus & S. pectinatus, *DC. prodr.* 7. *p.* 186, fide *Boiss.* S. tenuifolius, *Nutt.! in trans. Amer. phil. soc. l. c. p.* 438.

St. Diego, California, *Nuttall!*—The plant of Mr. Nuttall is said to grow in shady ravines among rocks, around St. Diego: but as the specimens wholly accord with slender states of S. tenerrimus (with the segments of the leaves chiefly linear; the involucre at length glabrous, or with a few glanduliferous hairs), we suppose it was introduced from Spain, among other weeds.

2. *S. oleraceus* (Linn.): glabrous, or the branches glandular hairy near the summit; cauline leaves runcinate-pinnatifid or rarely undivided, subspinulose-toothed, cordate-clasping, the auricles acute or acuminate; involucre and umbellate-corymbose peduncles (woolly when young) at length nearly glabrous; achenia striate, transversely rugose!—*Linn. spec.* 2. *p.* 794, var. lævis (*α.* & *β.*); *Fl. Dan. t.* 682; *Engl. bot. t.* 843; (*Ell. sk.* 2. *p.* 254!

Bigel. fl. Bost. ed. 2. *p.* 292?); *Hook.! fl. Bor.-Am.* 1. *p.* 292 (partly); *Koch, fl. Germ. & Helv. p.* 433. S. ciliatus, *Lam. fl. Fr.* 2. *p.* 87; *DC. prodr.* 7. *p.* 185. S. asper, *Gærtn. fr.* 2. *t.* 158; not of *Vill.* S. lævis, *Vill. Delph.* 3. *p.* 158.

Waste places, around gardens &c., introduced from Europe, and more or less naturalized in the United States! extending north to the Saskatchawan! and Newfoundland. Aug.–Sept.—Leaves more commonly divided, and the teeth less spinulose than in the following species. Flowers pale yellow. Achenia roughish or somewhat muricately rugose.—The distinguishing characters of this species not having been noticed by American writers, we are uncertain what synonyms are to be here adduced.—*Sow-Thistle.*

3. *S. asper* (Vill.): glabrous, or rather glandular-hairy at the summit; cauline leaves undivided, undulate, or slightly runcinate, conspicuously spinulose-toothed, cordate-clasping, with the auricles rounded; the upper lanceolate or oblong; the lower oval or spatulate, with a slender tapering base or winged petiole; involucre and umbellate-corymbose peduncles glabrous or slightly hairy; achenia margined, 3-nerved on each side, margined, smooth! (or the margins minutely serrulate-scabrous.)—*Vill. Delph. l. c.; Fuchs, hist.; Fl. Dan. t.* 893; *Reichenb. fl. excur.* 1. *p.* 274; *Koch, l. c.* S. oleraceus, var. asper, (γ. & δ.) *Linn. l. c.; DC. fl. Fr.; Borrer, in Engl. bot. suppl. t.* 2765 & 2766. S. oleraceus, var. spinulosus, *Oakes! cat. Vermont pl., in Thompson's gazetteer.* S. spinosus, *Lam. fl. Fr.*, not of *DC.* S. fallax, *Wallroth, sched. crit. p.* 432; *DC. prodr.* 7. *p.* 185. S. Carolinianus, *Walt. Car. p.* 192; *Ell.! sk.* 2. *p.* 255; *DC.! l. c.* S. spinulosus, *Bigel.! fl. Bost. ed.* 2. *p.* 292; *Darlingt.! fl. Cest. p.* 445; *DC. l. c.*

β. achenia more distinctly margined.—S. oleraceus, *Hook. & Arn. bot. Beechey, p.* 145; *Hook.! fl. Bor.-Am. l. c.*, as to Oregon plant. S. fallax? β. Californicus, *Nutt. in trans. Amer. phil. soc. l. c. p.* 438.

Fields and waste places, in rich damp soil throughout the United States! Probably indigenous to this country, at least in the south: now found in almost every part of the world. β. Oregon, *Dr. Scouler!* California, *Nuttall, &c.* Aug.–Sept., or in the Southern States, March–May.—Usually a smaller and more rigid plant than S. oleraceus. Flowers pale yellow.—*Sow-Thistle.*

* * *Perennial herbs.*

4. *S. arvensis* (Linn.): root creeping; stem erect, glabrous; leaves runcinate-pinnatifid, spinellose-toothed, cordate-clasping at the base, the auricles short and obtuse; panicle umbellate-corymbose; the pedicels and involucre hispid; achenia somewhat tetragonal, the ribs transversely rugulose. *DC. l. c.* —*Fl. Dan. t.* 606; *Engl. bot. t.* 674; *Pursh, fl.* 2. *p.* 501; *Beck, bot. p.* 171; *Hook. fl. Bor.-Am.* 1. *p.* 292. S. palustris, *Muhl. cat. p.* 73?

Newfoundland, *Hooker.* Essex County, Massachusetts, *Mr. Oakes!* Shores of Staten Island, New York, and the adjacent part of New Jersey, where it is perfectly naturalized! Pennsylvania, *Pursh;* in cultivated grounds and among rubbish; introduced from Europe. Aug.–Sept.—Heads large: flowers bright yellow.

S. pallidus (Willd. spec.) is a nominal species, wholly founded on the characters of Lactuca Canadensis of Linnæus and Tournefort, which afford no reason for deeming the plant either a Sonchus or a Mulgedium. Willdenow does not pretend to know the species, and it is mere pretence on the part of Pursh to speak of it as a common plant in Canada and New England.

ADDITIONS TO COMPOSITÆ.

LIATRIS, *p.* 67.

7 (*a*). *L. Chapmanii:* minutely cinereous-pubescent or nearly glabrous; stem rigid, very leafy; leaves strongly punctate, linear, rather obtuse, tapering to the base; the upper very short, the lowermost elongated; spike virgate, dense; the nearly sessile heads closely appressed, longer than the bracts, mostly 3-flowered; scales of the involucre (about 8), oblong, acute or mucronulate, appressed, resinous-punctate, shorter than the pappus, the outer very short; achenia villous-canescent; pappus rigid, plumose-barbellate towards the base.

Sand hills of Middle Florida, *Dr. Chapman!* Sept.—A foot or more in height; the cauline leaves, except the lowest, seldom more than an inch long, scarcely a line wide, broadest near the apex, usually spreading. Spike 4–10 inches long. Scales of the involucre often tinged with purple, obtuse and mucronulate, or acute, the margins very slightly if at all scarious. Flowers, and especially the pappus, large for the size of the heads; the latter composed of about 30 stiff bristles, fully as long as in L. cylindracea, very much longer than the achenia, densely barbellate towards the base, but scarcely more than denticulate at the apex.—This well-marked species belongs to the same subdivision as L. punctata, and has fully as large flowers; but the pappus is scarcely more plumose than in L. secunda.

10. *L. graminifolia*, δ. (L. dubia, *Barton! l. c.*) Add syn. L. propinqua, *Hook. bot. mag. t.* 2829.—If admitted as a species, the anterior name imposed by Barton must be retained.

EUPATORIUM, *p.* 81.

E. variifolium, Bartl. (*Ind. sem. hort. Gœtt.* 1840; *Linnæa*, 15, *suppl. p.* 93) appears to be only a state of E. cannabinum, and to have been mistakenly considered as of American origin.—A form of A. cannabinum was cultivated in the Berlin Botanic Garden in the year 1839, under the erroneous name of E. trifoliatum.

E. Engelmannianum, Link, proposed in *Ind. sem. hort. Berol.* 1840, is founded on a plant raised from seeds sent from this country by Dr. Engelmann: but we have not yet seen the description.

ASTER, *p.* 103.

10 (*a*). *A. eryngiifolius:* stem simple, hirsute, leafy to the summit, bearing solitary or very few heads; leaves rigid, erect, glabrous, narrowly linear-lanceolate, pungently acute, 1–3-nerved, with cartilaginous margins, sparsely spinulose-serrate, or rarely entire; the radical attenuate at the base; the upper successively shorter, partly clasping; scales of the hemispherical involucre numerous, nearly equal, lanceolate, foliaceous, rigid, with mucronate or cuspidate mostly squarrose tips; rays numerous (white); achenia glabrous.—Prionopsis? Chapmanii, *of this work, p.* 245.

As the rays of this plant prove to be white instead of yellow, we now remove it to its proper station next to Aster paludosus, with which it well accords in aspect, in the pappus, &c.; and from which its somewhat spinulose leaves and white rays abundantly distinguish it.

14. *A. adscendens* (Lindl.)—Wind River Chain of the Rocky Mountains, above 7000 feet, *Lieut. Fremont!* Var. α, and

δ. *Fremontii:* stem leafy, simple, bearing one or two heads; leaves thin; the cauline mostly oblong-lanceolate; exterior herbaceous; scales of the involucre loose (either numerous or few); the inner very narrowly linear, acute; pappus white.—A span high: perhaps a distinct species, connecting the Amelli with the Alpigenous Asters.

38. *A. ericoides, β. villosus.* Add syn. A. pauciflorus, *Martens! in bull. acad. Brux.* 8 (1841), *p.* 67.—The A. ericoides, *Schkuhr, handb. t.* 245, is a good representation of A. multiflorus.

71 (*a*). *A. anomalus* (Engelmann! mss.): more or less cinereous-pubescent; stem simple or racemosely branched above, the branches erect-spreading; leaves ovate or ovate-lanceolate, entire, acumiate; the radical and cauline cordate, on slender naked petioles (rarely somewhat serrate); those of the flowering branches lanceolate, subsessile; scales of the hemispherical involucre numerous, imbricated in several series, appressed at the base, with linear elongated and squarrose tips; achenia glabrous.

On limestone rocks, the brink of precipices, &c., in Illinois and Missouri, not uncommon, *Dr. Engelmann!* Sept.–Oct.—A most remarkable species, with nearly the foliage of Aster Shortii; while the heads and involucre much resemble those of A. oblongifolius, being equally squarrose, but rather smaller, and scarcely glandular or granular.

79. *A. reticulatus* (Pursh) should doubtless be stricken out, and the synonym referred to Diplopappus obovatus, *p.* 184.

106. *A. glacialis* (Nutt.)—Defiles of the Wind River Chain of the Rocky Mountains, and also just below the snow-line, *Lieut. Fremont!*—The latter specimens are only about two inches high, more pubescent; the leaves chiefly radical, short, and spatulate; and the involucre quite villous in a young state.—With the above, Lieut. Fremont also collected a specimen of A. Andinus, *Nutt.*, A. integrifolius, *Nutt.*, *&c.*

107. *A. salsuginosus* (Richards.)—Wind River Chain of the Rocky Mountains, above 7000 feet, *Lieut. Fremont!* Both var. *α.* & *β.* (Leaves varying from linear-lanceolate to spatulate-oblong: rays showy, violet-purple), and,

γ. *scaposus:* cæspitose, dwarf; scape slightly exceeding the obovate-oblong radical leaves, naked, or with a few bracts, bearing a single head.—Probably gathered near the snow-line.

110. *A. graminifolius* (Pursh).—New Hampshire, *Mr. Eddy!* in *herb. Tuckerman.*

116. *A.* (*Orthomeris*) *glaucus.*—Wind River Chain of the Rocky Mountains, at the elevation of 7000 feet or more, *Lieut. Fremont!*—A close congener of A. elegans (of which Lieut. Fremont gathered a single specimen near the same locality!): rays several, small: achenia slightly hairy.

121. *A.* (*Oxytripolium*) *angustus.*—Saline swampy margin of the Lake of the Woods, and of Devil's Lake, *Mr. Nicollet!*

SOLIDAGO, *p.* 195.

23. *S. humilis, β.*—Abundant in the *Notch* of the White Mountains of New Hampshire! (where it was first collected by *Mr. Tuckerman!*) Near the Willey house, several specimens of this plant, and also of S. altissima, were collected with greenish-white or cream-colored rays!

24. *S. Virga-Aurea, γ. multiradiata.*—Wind River Chain of the Rocky Mountains, from 7000 feet in elevation to near the snow-line, *Lieut. Fre-*

mont!—Two states were collected; the one connecting this variety with var. minuta and var. alpina; the other larger, with a stout glabrous stem.

25. *S. thyrsoidea.*—Abundant in woods from the base of the *Notch* to the alpine region of the White Mountains of New Hampshire, and also sparingly found on the exposed alpine summits, far above the limit of trees! Also *Indian Pass*, and sides of Mount Marcy, Northern New York, *Mr. Macrae!* Plant 1–3 feet high, mostly with an elongated virgate or thyrsoid leafy raceme.—Add syn. S. Virgaurea, *Pursh! fl.* 2. *p.* 542. (Labrador, *Kohlmeister!*)

26. *S. glomerata* (Michx.).—Our plant is certainly the species of Michaux, the specimen of his herbarium having been compared with ours by Mr. Decaisne. The state, with a strict glomerate inflorescence, as described by Michaux, has recently been collected on the Black Mountain, North Carolina, by Mr. Buckley.

31. *S. Riddellii.*—Add syn. S. amplexicaulis, *Martens! in bull. acad. Brux.* 8 (1841), *p.* 66.

39. *S. neglecta*, is not found in N. Carolina; the specimens received from thence prove to have been collected in Massachusetts. It extends northward to Montreal, *Mr. Macrae!*

40. *S. patula.*—The phrase 'leaves very scabrous above,' was accidentally omitted in the specific character.

49. *S. amplexicaulis.*—The reference to Martens under this remarkable species must be erased, his S. amplexicaulis being S. Riddellii, as above noted.

SILPHIUM, *p.* 274.

3. *S. pinnatifidum* (Ell.) must be reduced to a variety (β. *pinnatifidum*) of S. terebinthinaceum; Mr. Sullivant having noticed that they pass into each other, as we suspected, like the varying forms of S. compositum. In specimens from Alabama, collected by Mr. Buckley, the leaves vary from sinuate-toothed to somewhat bipinnatifid.

IVA, *p.* 286.

4. *I. microcephala.*—Middle Florida, *Dr. Chapman!*—Heads larger than in the original description, 6–8-flowered. Leaves filiform-linear, often an inch long, with smaller ones fascicled in their axils, punctate, and, like the branches, &c. sparsely strigose with minute hairs.

HELIANTHUS, *p.* 318.

13. *H. occidentalis* (Riddell).—Add var.

γ. *Dowellianus*: nearly smooth and glabrous; stem often stout (2–5 feet high) and more leafy, simple or corymbose-paniculate at the summit; leaves larger, varying from broadly ovate, or even slightly cordate, to oval-oblong.—H. Dowellianus, *M. A. Curtis! in Sill. jour.* 44. *p.* 82.

Around Franklin, Macon County, North Carolina, *Mr. Curtis! Mr. Buckley!* with var. β., which connects it to the ordinary state of the species.—Limb of the lower leaves 3–6 inches in length, 2–5 broad, rather coriaceous, in outline, &c., resembling those of some forms of H. atrorubens. Heads and flowers as in the ordinary form of the species.

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